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Research Article

The Relationship between Chronic Diseases and Emotional Responses in Elderly Residents of the Community-Focusing on the Evaluation Method of the 'Chinese Medicine Five Emotions Measurement Scale' and Prediction of Five Organ Diseases

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Abstract

The "mind-body unity" theory of Traditional Chinese Medicine (TCM) explains the mechanism of the occurrence of five-organ diseases as a gradual progression from "spirit" to "form". What the eyes cannot see are the spiritual aspects of the five organs (such as the heart spirit, consciousness, emotions, etc.), while what the eyes can see are the physical forms of the five organs (anatomical and physiological structures). In the early stages of the disease, the spirit departs and gradual changes in the physical form occur, with the disease progressing from the superficial to the deeper levels. Abnormal emotions and mental states at this stage manifest as external signs. If treatment can be applied at this stage, it is likely to prevent the progression of the disease to the internal organs. Although the explanations of Western medicine and TCM differ greatly, the establishment of research evidence from both perspectives will be beneficial for the integration of traditional and modern medicine, in the prevention and treatment of five organ diseases.

To predict the occurrence tendency of five organ diseases, we surveyed 281 local residents of K City using our previously established "Chinese medicine five emotions (anger, joy, thought, sorrow, fear) measurement scale to clarify the relationship between the degree of chronic diseases and emotional responses. In addition, we established a concrete method for the widespread use of this scale. Since it predicts the future tendency of the occurrence of diseases of the five internal organs and provides suggestions for emotional control, it is even more in demand in developed countries where the prevention of diseases of the five internal organs is attracting attention.

Keywords: Chronic diseases; Emotional responses; Five organs

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Introduction

In recent years, the leading causes of death among adults are malignant tumors, followed by cardiovascular and cerebrovascular diseases, and lung diseases. According to the Ministry of Health's "2022 Population Dynamics Statistics" [1] published in September 2023, the most common types of cancer-related deaths among men are lung, colon, stomach, pancreas, and liver cancer, while among women they are colon, lung, pancreas, breast, and stomach cancer. These are all organic diseases of the internal organs that have a significant impact on public health indicators. Therefore, the prevention of organic diseases has become a common global challenge. Additionally, a survey by Konagaya et al., [2] on elderly residents in the community showed that among 2,762 elderly individuals, more than 1,782 (65%) were suffering from diseases, indicating a high rate of chronic diseases that severely affect their quality of life. Traditional Chinese Medicine (TCM) holds that negative emotions are at the root of all disease. In a study by Hao [3] on 245 hospitalized cancer patients, it was found that 66.9% had experienced negative emotions before being diagnosed with cancer. From these results, it can be said that negative emotional responses are the first stage before the development of these diseases. Every disease progresses from the surface to the internal organs, starting from the mind and spirit and gradually manifesting in physical form. Therefore, if we can clarify the relationship between these diseases and emotional responses, it will provide valuable insights for developing prophylactic strategies.

In TCM, the five emotions of anger, joy, thought, sorrow, and fear (hereafter referred to as the five emotions), are associated with the functions of the five organs, namely the liver, heart, spleen, lungs, and kidneys, respectively. The five emotions are external manifestations of the functional activities of the five organs, so a normal response of the five emotions probably reflects the normal functions of the five organs, but an abnormal response of the five emotions indicates abnormalities in the functions of each organ. Therefore, it is possible to diagnose the initial tendency of the response of the five emotions before physiological symptoms appear, to predict the degree of damage

to the five organs, and intervene in emotional control at an early stage. Aiming to regulate the disordered emotions and to improve the functions of the five organs, new intervention methods such as the qigong method of TCM have attracted attention [4]. Previous research has clearly demonstrated the inseparable relationship between emotions and organ functions, but the evaluation of emotions is mainly partial, such as depression and apathy tests, and there has been little research exploring the relationship between the holistic emotional status and diseases.

The relationship between emotions and disease has been a focus of research in various fields of modern medicine and psychology. Since "shen" (spirit) is the unified control tower that governs human life activities, an abnormal spiritual environment, such as disturbed emotional responses, is considered as an important trigger of disease [5]. Emotional responses are a representative expression of "shen". In TCM, it is considered crucial to treat before symptoms of disease appear. The "five organs" of liver, heart, spleen, lungs, and kidneys correspond to the "five emotions" of anger, joy, thought, sorrow, and fear. The liver governs anger, the heart governs joy, the spleen governs thought, the lungs govern sorrow, and the kidneys govern fear. When each emotion is unbalanced, the function of the corresponding organ is impaired. Wu [6] states that the five emotions play an important role in maintaining the functions of the five organs. "Too much joy harms the heart," "too much thought harms the spleen," "too much sorrow harms the lungs," "too much fear harms the kidneys," and "too much anger harms the liver." Each of the five organs has the function of controlling each of the emotions so that none of the emotions should be overly expressed. When the five emotions cannot be controlled and internal balance is lost, disease occurs. If the "five emotions" could be measured, it would be possible to make an early prediction of the weakened state of the five organs.

Methods

Operational definition of terms

The "Chinese Medicine Five Emotions Scale": The scale used in this study is the "20-item Chinese Medicine Five Emotions Scale (abbreviated as MFE20)" developed by Wu X, Zou J, He Z et al. [7], The scale defines four response patterns for the five emotions (anger, joy, worry, sorrow, fear): "normal response state," "self-regulation state," "overreaction state," and "daily state." The 20 items are scored on a four-point scale: "disagree" (1 point), "somewhat disagree" (2 points), "somewhat agree " (3 points), and "agree" (4 points). For the five items in the "overreaction state" (items 3, 7, 11, 15, and 19), the scores are calculated in reverse. The scoring criterion is set so that the higher the score, the better the emotional response.

Chronic disease

Information on the presence or absence of diseases and the specific names of the diseases were collected by self-report. The names of the diseases were classified according to the TCM theory of body structure (Table 1). In TCM, the five organs are not just simple physical organs; they are connected to the surface organs (such as the eyes, ears, nose, mouth, and tongue) and the mental and emotional functions of the body through the meridian system, forming an integrated system. Each of the five organs also represents a subsystem: The liver system includes the gall bladder, eyes, tendons, and the emotion of anger; the heart system includes the small intestine, tongue, blood circulation, lymphatic circulation, brain functions such as consciousness, and the emotion of joy; the spleen system includes the stomach, mouth, muscles, and the emotion of worry; the lung system includes the large intestine, nose, respiration, skin, and the emotion of sadness; the kidney system includes the bladder, bones, hair, ears, excretion, reproduction, and the emotion of fear. This system serves as the basis for the classification of chronic diseases in this study [8].

Form (形)		Mind and Spirt (神)		
Five Organs system		Five Essence	Five Emotions	System Function
Liver	gallbladder	Soul	Anger	storing blood and regulating blood
	tendon			flow
	eyes			detoxification relieve emotions
				depression vent
Heart	small intestine	Deity	Joy	blood circulation
	pericardium			brain consciousness,
	san jiao			perception, memory, judgment
	tongue			controls the mind, and thinking
				store the spirit and mind
Spleen	stomach	Intention	Thought	nutrition absorption, digestion, and
	muscle			delivery to the whole body
	mouth			mastering desires(including appetite)
Lungs	large intestine	Courage	Sorrow	respiratory function
	nose			gas exchange with nature
	skin			regulating body's qi, blood, and water
Kidney	urinary bladder	Ambition	Fear	regulating breathing
	ear			storing innate vital energy (substances that sustain life)
	bone			functions of water metabolism
	hair			"source of life"
	urethra and vagina			growth, development, reproduction

Table 1: The system of oneness of form and spirit centered on the five organs.

This system is an integrated system based on nature, as shown in the figure 1 below. A person's body and mind are in a balanced with nature, which is also the state of health. When this balance is disturbed, disease occurs.

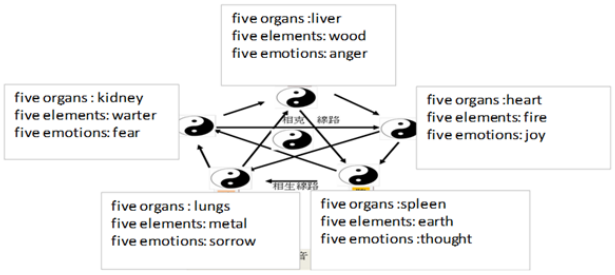

Figure 1: The relationship between the five organs/five elements/five emotions.

Materials and Methods

Sample Size

We multiplied the number of items in the MFE scale by 20 to determine the target sample size of 400. Given the potential for missing values on the questionnaires and the expected response rate, after obtaining research consent from the K City Long-Term Care Prevention Center, a survey of 700 elderly individuals aged 65 years and older who participated in activities at the center was conducted using anonymous, self-administered questionnaires.

Survey Deployment

Between April 1st and November 30th, 2023, survey forms along with self-addressed stamped envelopes were distributed at the Care Prevention Center in K City, Japan. The survey form consisted of 20

items from the MFE scale and chronic disease status (whether or not the participant had a chronic disease and the specific name of the disease). Additionally, background information including age, gender, presence of cohabitants (yes or no), and use of home service (yes or no) were collected using a checklist.

Statistical Methods

Statistical analysis was performed using the Japanese version of SPSS 28.0 J. The relationship between the presence or absence of disease and multiple diseases and mood scores was compared between groups using a two-tailed T test. P values less than 0.05 were considered statistically significant.

Results

Participant Characteristics

A total of 700 questionnaires were distributed, and 343 were returned, resulting in a response rate of 49.0%. After excluding 62 individuals with incomplete information, 281 participants were included in the analysis. Of these, 224 were female (79.7%) and 57 were male (20.3%), with ages ranging from 65 to 97 years. Participant characteristics are shown in table 2. A total of 179 participants (63.7%) lived alone, while 102 (37.3%) did not. Additionally, 197 participants (70.1%) had chronic medical conditions, while 84 (29.9%) did not. Ten participants (4.6%) had used home services, while 271 participants (96.4%) had not (Table 2).

Variables	N = 281	
Mean age (SD+) in years	Maximum	90
	Minimum	65
	Mean age (SD+)	77.05 ± 5.85
Sex	Male	57 (20.30%)
	Female	224 (79.70%)
Presence or absence of cohabitants	Yes	179 (63.70%)
	No	102 (36,30%)
Presence or chronic illness	Yes	197 (70.1%)
	No	84 (29.9%)
Use of in-home service	Yes	10 (4.60%)
	No	271 (96.40%)

Table 2: Participant's characteristics.

Descriptive Statistics of Chronic Disease and Organs

Disease classification based on the TCM theory of human body structure. Descriptive statistics states (Table 3). The 281participant characteristics are shown in Table 3. Current diseases in five organs based on traditional Chinese medicine: 5 people with liver system (1.8%), 131 people with heart system (46.6%), 19 people with spleen system (6.8%), 8 (2.8%) people with lung system, 5 people (1.8%) had kidney system, 29 people (10.3%) had two or more types of diseases, and 84 people (29.9%) had no disease. (Table 3).

A t-test was used to compare the MFE scores between the groups with and without chronic disease. As shown in table 4, the MFE scores were significantly lower in participants with chronic disease.

Furthermore, a t-test was conducted to compare the MFE scores of each organ (liver, heart, spleen, lung, and kidney) between the groups with 2 or more types of diseases or with no chronic diseases. As shown in table 5, the scores in four emotions (joy, thought, sorrow, and fear) were significantly lower in the group with two or more organs than in the group with no organs.

Variables	N = 281	
Liver	5	1.8%
Heart	131	46.6%
Spleen	19	6.8%
Lungs	8	2.8%
Kidney	5	1.8%
multiple diseases	29	10.3%
No iliness	84	29.9%

Table 3: Chronic Disease and Organs.

Organs and emotions		disease group (N=197)	No chronic disease group (N=84)	t	p
Liver →	Anger	8.85±1.8	9.22±1.9	1.842	0.334
Heart →	Joy	9.47±1.7	10.05±1.6	1.844	0.061
Spleen →	Thought	9.30±2.3	10.25±2.6	2.700	0.008
Lungs →	Sorrow	9.93±2.2	10.53±2.4	1.740	0.081
Kidney →	Fear	9.11±1.9	9.91±2.3	2.747	0.020

Table 4: Scores of emotions (MFE) different in chronic disease and no disease.

Organs and emotions		Chronic disease 2 or more types (N=29)	No chronic disease group (N=84)	t	p
Liver →	Anger	8.31±1.8	9.22±1.9	1.548	0.124
Heart →	Joy	8.65±1.7	10.05±1.6	2.556	0.012
Spleen →	Thought	8.66±2.3	10.25±2.6	2.803	0.006
Lungs →	Sorrow	8.65±2.2	10.53±2.4	3.316	0.001
Kidney →	Fear	8.31±1.9	9.91±2.3	3.053	0.003

Table 5: Scores of emotions (MFE) different in chronic disease 2 or more types and no disease.

Discussion

Suggestions for preventing organ diseases

The "Traditional Chinese Medicine Five Emotions Measurement Scale" used in this study was established through four sequential processes: 1) constructing the theoretical structure of the scale, 2) creating a draft framework for the questions, 3) examining the theoretical content validity [5], and 4) conducting a survey of 184 local residents in Japan to verify the validity and reliability of the scale [5]. In the present study, we clarified the relationship between chronic diseases and emotional responses. This finding may facilitate the early detection of five organ diseases from emotional imbalance in the future.

Development of five-emotion nursing (emotional care)

Based on TCM, the five emotions of nursing (emotional care) for various diseases are emphasized, and the evaluation scales used for this purpose, such as depression scales and anxiety scales, have been used to measure partial emotions [9,10]. In the present study, we used a new holistic scale to measure the emotional responses. In TCM, the five emotions reflect the function of the five internal organs. Our results show a significant relationship between emotions and disease, and suggest that intervention in emotional control has the potential to improve organ function and prevent disease.

How to Use the Scale

Measuring the functions of the five organs and emotions

The five emotions play an important role in maintaining the function of the five organs. The liver controls anger, the heart controls joy, the spleen controls thought, the lungs control sorrow, and the kidneys control fear. Too much anger hurts the liver, too much joy hurts the heart, too much thought hurts the spleen, too much sorrow hurts the lungs, and too much fear hurts the kidneys. All emotions should be well-balanced to represent the homeostasis of the internal organs. The 20 questions on the five emotions in TCM (anger, joy, thought, sorrow, fear) were created according to the functions of the five organs. As shown in the chart below, it can be inferred that the Fullfilled type is considered as the healthy state, while the Unbalanced type is more likely to develop disease (Figure 2).

Figure 2: Fullfilled type, poor type and unbalanced type.

For assessment during nursing intervention in emotional control

There are two ways to resolve abnormal emotions. One is to simply release one's feelings, as in "when angry, one should be angry," "when happy, one should be happy," and "when sad, one should be sad," which are the principles of mental health care in TCM. The other way is to use the opposite emotion to balance the disturbed emotion. For example, "sadness triumphs over anger (when anger is too strong, one should embrace the sad emotion, which acts as a mutual constraint that can eliminate anger)," "fear triumphs overjoy (when joy is too strong, one should defeat it with the emotion of surprise)," "anger triumphs over thoughts (when thoughts are too strong, one should defeat them with anger)," "joy triumphs over sadness (when sadness is too strong, one should defeat it with the emotion of joy)," and "thoughts triumph over fear (when fear is too strong, one should defeat it with the emotion of thoughts)." This scale can be used to determine which emotions need to be regulated and to evaluate the effectiveness of emotional nursing interventions.

Research Limitations and Challenges

In this study, data on chronic disease data were collected from subjects in a self-report format without verification by a medical provider. In future studies, we will survey hospitalized patients with chronic diseases using questionnaires and examine the relationship between emotional responses and the onset of chronic diseases.

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Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical Statement

Ethical Approval: The present work was approved by the Research Ethics Committee of the Kyoto Koka Women's University (22MM01). The survey forms were placed in self-addressed stamped return envelopes. The individuals who filled out and returned the envelopes voluntarily were considered to have provided consent to be a participant in this study.

Author's Contribution

1 All authors are Faculty of Health Science, Department of Nursing, Kyoto Koka Women's University, Kyoto, Japan.

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