

**SOUTH BAYLO UNIVERSITY**

**The Effects of Korean Sasang Constitutional Medicine on Quality of Life: A  
Systematic Review**

**by**

**Yoon Kyoung Lee**

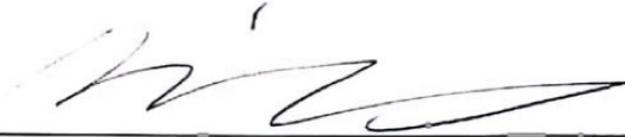
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IN PARTIAL FULFILLMENT OF THE  
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**Doctor of Acupuncture and Oriental Medicine**

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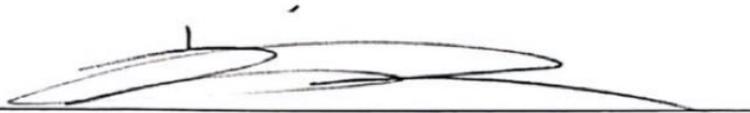
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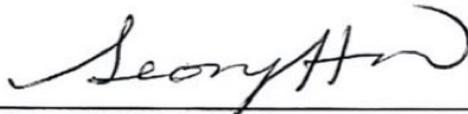
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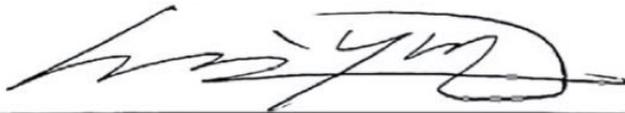
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Systematic Review**

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**ABSTRACT**

This study was conducted to investigate the effects of Korean Sasang Constitutional Medicine on quality of life. Five electronic databases were searched for articles published in the last twenty years using the following keywords: Sasang, Sasang Constitutional Medicine, and Sasang typology as well as the related words such as urination, perspiration, defecation, digestive function, and psychological features in either English or Korean. As a result, thirty-nine articles were included and analyzed in terms of physical, mental, and social well-being according to the definition of health as defined by the World Health Organization (WHO). The physical well-being category was further classified into four subcategories: urination, perspiration, defecation, and digestive function as each Sasang constitution is physically related to, moreover, psychological features pertaining to Sasang Constitutional Medicine in terms of mental and social well-being were analyzed. Significantly different characteristics and health indicators of the Sasang constitutions were found. The Tae-Eum (Greater Yin) type demonstrated highly

concentrated and foamy urine, excessive sweat, thick stool, good digestion, and sweating is as a health indicator. The So-Yang (Lesser Yang) type demonstrated sweat at night when in poor condition, high sensitivity to defecation, fewer indigestion issues, and defecation is as a health indicator. Lastly, the So-Eum (Lesser Yin) type demonstrated high urination frequency, less sweat and fatigue after sweating, low frequency of defecation with tender stool, poor digestive function, and digestion is as a health indicator. In psychological features, the So-Yang type was positioned in diverse extroverted characteristics while the So-Eum type was the opposite. The Tae-Eum type was positioned in between the So-Yang and So-Eum types. Ultimately, Korean Sasang Constitutional Medicine is expected to contribute to predictive, preventive, and personalized medicine along with discovering oneself utilizing each constitutional type-specific feature in terms of physical, mental, and social well-being, and thus the quality of life can be improved.

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*For My Lord*

## I. INTRODUCTION

The World Health Organization (WHO) defines health as ‘a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity’.<sup>40</sup>

Consequently, the practitioner who deals with the patient’s health should aim for holistic medicine that encompasses not only physical but also psychological and emotional aspects that embrace mental and social well-being as a unified whole. Humans have both body and mind and they interact with each other, so it is inferior medicine if mental elements are excluded when defining health and disease to treat patients.<sup>47</sup>

If so, it is an urgent need to have a deeper understanding of ourselves at this point of emphasizing not only physical but also mental, and social well-being. This is because when we understand ourselves, we can understand others as well as the world and will be able to overcome various psychological and emotional conflicts that occur among different humans, furthermore, social well-being can also be expected.

Besides, note the fact that on May 25, 2019, WHO unanimously recognized ‘gaming disorder’ as a mental health condition adding the disorder to the International Classification of Diseases (ICD-11).<sup>40</sup> Human life has been becoming more convenient due to the development of advanced science and mechanical civilization, but while living in this complex and chaotic modern age, we live without a deeper understanding of ourselves during our busy lives. We should think carefully about ourselves to realize ourselves, free from dependence and attention on things other than us.

Oriental medicine is a natural medicine based on the principle of all things in the universe and humans are defined as a microcosm where the yin and yang as well as the five elements of nature, namely, wood, fire, earth, metal, and water are existed within.<sup>48</sup> Therefore, humans are nature and oriental medicine should be anthropology.

Meanwhile, Korean Sasang Constitutional Medicine is a form of personalized medicine, which divides humans into four constitutional types, the Tae-Yang (Greater Yang), Tae-Eum (Greater Yin), So-Yang (Lesser Yang), and So-Eum (Lesser Yin) type, based on their physical, pathophysiological, and psychological features, and presents a holistic approach according to the philosophical theory of four virtues in Confucianism by Je Ma Lee in his book 'Dong-Ui-Su-Se-Bo-Won' (Longevity and Life Preservation in Eastern Medicine).<sup>41-43</sup>

In the Traditional Chinese Medicine that focuses on pathology and symptomatic treatment, all humans are seen similarly. In contrast, in Korean Sasang Constitutional Medicine, humans living within the society and having relationships are more than nature and have the quality of 'heart-mind' where all can be learned by looking within.<sup>41-43</sup>

As the theory behind Sasang Constitutional Medicine encompasses biologic along with sociologic aspects, integrating the 5000 years of clinical experience with the sociologic and psychological achievements propagated by Confucianism<sup>25,41,55</sup>, Sasang Constitutional Medicine is holistic medicine as well as anthropology that deals with the body and mind together and encompasses them as a unified whole.

However, in the existing clinical practice, most treatments are not based on holistic medicine that treats humans as an integrated whole, the body and mind together, but most of them rely on symptomatic treatments that cannot cure the root causes of diseases.<sup>47</sup>

Concerning the root causes of diseases, the Human Genome Project (HGP) has encouraged efforts to personalize medical treatment with genetic etiology based on DNA analysis to learn about the risk of future illness for a form of preventive medicine.<sup>46,60-62</sup>

It leads Western medical scientists to make a move to provide a new form of medical care to prevent, diagnose, treat, and cure diseases using the results of HGP.<sup>60,61</sup> This suggests the need to develop personalized treatment plans in Oriental medicine through each constitutional type-specific feature analysis based on Korean Sasang Constitutional Medicine.

Therefore, this study was conducted and analyzed data on characteristics that are distinctly different for each Sasang constitution in terms of physical, mental, and social well-being according to the definition of health as defined by WHO through predictive, preventive, and personalized medicine along with discovering oneself based on Korean Sasang Constitutional Medicine supporting the high expectations of improvement on the quality of life.

## **OBJECTIVES**

The objectives of this study were as follows:

1. Determine whether there were significant differences in terms of physical, mental, and social well-being for each Sasang constitution through data analysis.
2. Reveal that quality of life can be improved when approached with predictive, preventive, and personalized medicine along with discovering oneself based on Korean Sasang Constitutional Medicine in terms of physical, mental, and social well-being.
3. Analyze significantly different characteristics of the Sasang constitutions and apply personalized treatment plans in clinical practice.

## LITERATURE REVIEW

### 1. The Birth of Korean Sasang Constitutional Medicine

The Sasang Constitutional Medicine (SCM) is a unique traditional Korean personalized medicine based on Confucianism and it was systematized by Je Ma Lee in his book ‘Dong-Ui-Su-Se-Bo-Won (Longevity and Life Preservation in Eastern Medicine)’ in 1894. Je Ma Lee derived the title ‘Sasang’ from *I Ching*, which states: “The *Tai Qi* gives rise to Yin and Yang, which in turn become the ‘Sasang’”.<sup>41,42</sup>

The *Tai Qi*, translated as “Great Ultimate”, is a vast force that permeates all things and consists of two opposing energies referred to as Yin and Yang. In their pure and isolated form, each of these energies is without significance, since all phenomena consist of varying combinations of Yin and Yang engaged in a dance of life. These combinations, in their simplest form, are referred to as Sasang or ‘Four Symbols’. The Four Symbols are also referred to as Yin within Yin (Greater Yin), Yang within Yin (Lesser Yin), Yin within Yang (Lesser Yang), and Yang within Yang (Greater Yang). In Korean, the Four Symbols are pronounced Tae-Eum (Greater Yin), So-Eum (Lesser Yin), So-Yang (Lesser Yang), and Tae-Yang (Greater Yang). Je Ma Lee adapted these names for each of his four constitutions. He believed that these four combinations symbolize four fundamental differences among each person, which result from varying degrees of bodily Yin and Yang energy, where the Tae-Yang (Greater Yang) type has the most abundant Yang and the Tae-Eum (Greater Yin) type has the most substantial Yin energy. Furthermore, he equated the Four Symbols with the four major organ systems of the lungs, spleen, liver,

and kidneys, and the heart with *Tai Chi* since it governs all the organs and feeds energy and blood to the entire body.<sup>42</sup>

Therefore, human beings are classified into four Sasang constitutions with a combination of yin-yang and greater-lesser: Tae-Yang (Greater Yang), Tae-Eum (Greater Yin), So-Yang (Lesser Yang), So-Eum (Lesser Yin) by both their physical and psychological traits.<sup>41-43</sup>

## **2. Comparison between the Traditional Chinese Medicine and Korean Sasang Constitutional Medicine**

There are as many similarities as there are differences between the Traditional Chinese Medicine (TCM) and SCM. While the approach of SCM is the distinct medical system, it is still based on the same basic principles of Yin and Yang as TCM. Without the influence of TCM, SCM would not exist.

One of the significant differences between TCM and SCM is that the heart in TCM is viewed as one of the five internal organs with its meridian system paired with the small intestine meridian while the heart in SCM as a king among the five organs is considered the ‘mind’ and governs the four internal organs that are in a predominant hyper or hypo relationship with each other depending on the constitution.<sup>41-43,55</sup> (Figure 1)

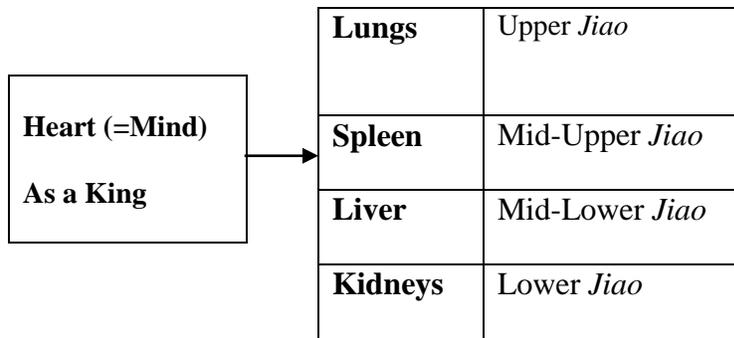


Figure 1. The Principle of Sasang Constitutional Medicine

Not only in SCM but also in other following classics, the importance of the heart can be found:

‘The Yellow Emperor’s Classic of Medicine’ Su wen: ling lan mi dian lun- xin zhe, jun zhu zhi quan, shen ming chu yan. ( ‘黃帝內經’ 素問: 靈蘭秘典論- 心者, 君主之官也, 神明出焉。 ) - Since the heart is a king in all the organs, the brightness of mind comes from here.<sup>53</sup>

‘Oriental Medicine Classical Theory’ Shen cang hu xin, zhu yi shen, zong she qi qing, zhuo wan yuan. ( 醫鑑重磨: 神藏乎心 主一身 總攝七情 酌萬緣。 ) - The mind is kept in the heart and governs the whole body. Therefore, it administers tens of thousands of relationships overseeing the Seven Emotional Disorders.<sup>54</sup>

‘The Yellow Emperor’s Classic of Medicine’ Su wen: shang gu tian zhen lun- Tian tan

xu wu, zhen qi cong zhi, Jing shen nei shou, bing an cong lai. (‘黃帝內經’素問: 上古天真論: 恬憺虛无, 真氣從之, 精神內守, 病安從來。)- If you calm and empty your mind, good energy comes to follow. Keep your mind inside, then how can the illness come?<sup>53</sup>

Je Ma Lee believed that all illness is directly related to one’s emotional well-being. He repeatedly witnessed how the doctors of his time would often make matters worse by prescribing medicine based on symptomatic presentation rather than an imbalance of the four constitutional temperaments: sorrow, anger, gladness, and enjoyment, which lead to the imbalance of the organs. The Yellow Emperor’s Classic of Medicine, the earliest known treatise in TCM, also mentions the influence of the Seven Emotional Disorders (joy, anger, worry, contemplation, sorrow, fear, and shock), but is aimed at addressing the Six Climatic Factors (Heat, Cold, Dryness, Dampness, Summer Heat, and Wind) and balancing one’s health according to the season. Hence in TCM, diseases caused by emotional imbalance were often considered difficult to treat and, although discussed, were not given precedence.<sup>42</sup>

Each of the four constitutions in SCM is born with a stronger and weaker organ system influenced by inherent emotional inclinations. A propensity for sorrow, for example, stimulates lungs development in utero while enjoyment stimulates the kidneys. Excessive sorrow, however, may overstimulate and stagnate the lungs’ energy. Sorrow in SCM is negatively correlated with gladness, the emotion of the liver. Hence excessive sorrow decreases gladness, resulting in a liver deficiency. Although organ excess and deficiency are the central aspects of the Five Yin and Six Fu Organ Theory in TCM, emotion is not

considered the source of inherent organ strength or weakness. Instead, organ strength is affected by one's *Pre-Heaven* energy causes insufficient development of the organs in utero. In SCM, it is the parents' emotional not physical health that primarily influences the organ development of their offspring. While organ theory plays a central role in both Chinese and Sasang medical diagnoses, each holds its interpretation. In SCM, for example, each of the Four Major Organs is considered the governor of its domain, controlling the function of other organs in its vicinity. Along with the Four Major Organs are the four sections of the body, referred to as *Cho* 焦 (*Jiao*). The Upper *Cho* 焦 (*Jiao*) is governed by the lungs and the emotion of sorrow, the Mid-Upper *Cho* 焦 (*Jiao*) is governed by the spleen and the emotion of anger, the Mid-Lower *Cho* 焦 (*Jiao*) is governed by the liver and the emotion of gladness, and the Lower *Cho* 焦 (*Jiao*) is governed by the kidneys and the emotion of enjoyment.<sup>41,42,59</sup> (Table 2)

TCM describes three *Jiao* (pronounced *Cho* in Korean). The Upper *Cho* 焦 (*Jiao*) consists of the heart and lungs, Middle *Cho* 焦 (*Jiao*) the stomach and spleen, and Lower *Cho* 焦 (*Jiao*) the liver, kidneys, small intestine, large intestine, gall bladder, and urinary bladder. Although TCM associates each organ with emotion, it doesn't emphasize the role of emotions in controlling the function of their respective organs or the *Cho* 焦 (*Jiao*) in which they are located.<sup>42</sup> (Table 1)

Table 1- The Traditional Chinese Medicine organ system

<b>Yin organ</b>	<b>Location</b>	<b>Yang correlate</b>	<b>Location</b>	<b>Emotional correlate</b>
Lungs	Upper <i>Jiao</i>	Large intestine	Lower <i>Jiao</i>	Sorrow
Heart	Upper <i>Jiao</i>	Small intestine	Lower <i>Jiao</i>	Anxiety
Spleen	Middle <i>Jiao</i>	Stomach	Middle <i>Jiao</i>	Contemplation
Liver	Lower <i>Jiao</i>	Gall bladder	Lower <i>Jiao</i>	Anger
Kidneys	Lower <i>Jiao</i>	Urinary bladder	Lower <i>Jiao</i>	Fear

Table 2- Korean Sasang Constitutional Medicine organ system

<b>Yin organ</b>	<b>Location</b>	<b>Yang correlate</b>	<b>Location</b>	<b>Emotional correlate</b>
Lungs	Upper <i>Jiao</i>	Esophagus	Upper <i>Jiao</i>	Sorrow
Spleen	Mid-Upper <i>Jiao</i>	Stomach	Mid-Upper <i>Jiao</i>	Anger
Liver	Mid-Lower <i>Jiao</i>	Small intestine	Mid-Lower <i>Jiao</i>	Gladness
Kidneys	Lower <i>Jiao</i>	Large intestine  Urinary bladder	Lower <i>Jiao</i>	Enjoyment

### **3. Sasang Constitutional Theory and the Four Humors**

The concept of four humors is deeply embedded in Western medical philosophy, serving as the dominant view of medicine up to the advent of modern science. This theory, promoted by the teachings of Hippocrates (c. 460 - c. 370 BC) and Galen (129-201 AD), is dismissed by mainstream Western medicine, as it adheres to a physiological vs. metaphysical view of the human body.<sup>42</sup>

A far back as ancient Greece, the significance of four humors influenced which foods, exercises, and herbs were selected to improve health. Hippocrates himself claimed that it is more important to know the characteristics of the individual than the disease they present. He introduced the concept of four humors (blood, phlegm, yellow bile, and black bile) and the importance of balance among them. The four humors were later elaborated upon by Galen who associated them with psychological temperaments (blood-sanguine, black bile-melancholic, yellow bile-choleric, and phlegm-phlegmatic). This contribution was based on his belief that health depends on a balance of temperament and that disease resulted from an imbalance of humors, a concept referred to as dyscrasia.

Although they came from different backgrounds and traditions, Galen and Je Ma Lee both held the four constitutional concepts as the main premise of their teachings. They also shared a belief that certain foods and herbs with different characteristics of temperatures could facilitate or impede balance within the body. Galen prescribed Cold-natured herbs to treat Heat-related conditions (i.e. biliary disorders) and Hot-natured herbs to address Cold-related issues (i.e. phlegmatic disorders). Je Ma Lee also applies the principle of treating Cold conditions with Hot-natured herbs and Heat-related situations with Cold-natured herbs but adds that each constitution benefits from different

temperatures. The So-Yang type's hyperactive spleen, for example, produces abundant Heat while the So-Eum type's hyperactive kidneys produce abundant Cold. Hence the So-Yang type's illnesses are often Heat-related and are commonly addressed with Cold-natured herbs while the So-Eum type's illnesses are Cold-related and are addressed with Hot-natured herbs.<sup>42</sup>

#### **4. Health and the Four virtues**

The 'Dong-Ui-Su-Se-Bo-Won (Longevity and Life Preservation in Eastern Medicine)' is a text that goes beyond the confines of medicine: structured in such a way that each chapter builds a complete picture of humanity. The opening chapter, *Theories on Human Nature and Conduct*, describes the intricate and interdependent relationship between man and heaven. It also offers a philosophical anecdote of humanism according to the Confucian tradition, which emphasizes the influence of *Chon Song*, the seed of heaven planted within the heart of every human being. Je Ma Lee describes how the Confucian Four Virtues of compassion, humility, righteousness, and wisdom, which are embedded within human nature, set humanity apart from other organisms. Health, according to Je Ma Lee, is dependent on the discovery and cultivation of these innate Virtues and thus, enhancing the connection between man and heaven.

Je Ma Lee admitted that the process of manifesting virtue is a fundamental challenge that can only be accomplished through steadfast self-reflection and sincere effort. Virtue depends on the ability to balance one's temperament (sorrow, anger, gladness, or enjoyment). These emotional tendencies either support or impede the path towards virtue and health. The manifestation of virtue, according to Confucian teachings, is primarily

realized through social interaction and the ability to reflect on one's actions.<sup>42</sup>

### **5. Original symptom: The differentiation factors of SCM**

Original symptom means inborn element in 'Dong-Ui-Su-Se-Bo-Won (Longevity and Life Preservation in Eastern Medicine)' and Je Ma Lee suggested that each constitutional type has its own innate tendencies physically and mentally.<sup>41,43,44</sup> Extensively, it is defined as the sum of clinical information featured by an individual's intrinsic characteristics and health status prior to the onset. This occurs because each constitutional type has its own imbalance in metabolic functions or the type-specific unique characteristics of energy-fluid or water-food metabolism, and the uniqueness originates from the innate variation of function in the internal organ system. The original symptom refers to both ill and good conditions.<sup>44</sup> It comes from the imbalance in the function of the inner organ system and extensively expresses both physiological and pathological symptoms in SCM.<sup>41,42</sup>

### **6. Characteristics in SCM**

Each constitution has its innate imbalance in the function of internal organ systems and it accounts for the type-specific unique characteristics of energy-fluid (lungs and liver) or water-food metabolism (kidneys-spleen).<sup>41,42,43,51</sup>

The Tae-Yang type has hyperactive lungs and a hypoactive liver that manifests a state of strong consumption and weak storage of energy and body fluid<sup>9</sup>. It is the rarest of all body types. This is because the Tae-Yang type has the most Yang energy of all the body

types, and Yang energy is difficult to embody in physical form (a Yin process).<sup>45</sup>

The Tae-Eum type has a hyperactive liver and hypoactive lungs that are characterized by a state of weak consumption and strong storage of energy and body fluid. The Tae-Eum and So-Eum types generally have greater lower body development, due to the descending of Yin energy. As the Tae- Eum type is the greater Yin, they hold more mass and embody more easily. They are physically heavier, thick-boned, and slower. Internally, they possess the slowest metabolism of all four constitutional types.<sup>45</sup>

The So-Yang type has a hyperactive spleen and hypoactive kidneys, which leads to a consistent state of strong raw material intake and weak waste discharge. This type is also Yang, but is lesser of the two Yang constitutional types. Unlike the Tae-Yang type, their energy has already dispersed somewhat, like a waning sun. Physically, their shoulders and chest are well developed (Yang), but their waists and lower bodies (Yin) seem frail in comparison. The So-Yang type generally tends to have warm bodies (Yang) and possess fast metabolisms (Yang).<sup>45</sup>

The So-Eum type has hyperactive kidneys and a hypoactive spleen that has a state of weak raw material intake and strong waste discharge. This type is also Yin, but is the lesser of the two Yin constitutional types. Unlike the Tae-Eum type, the So-Eum type's Yin is weaker, causing them to hold less mass and thus have smaller bodies. Similar to the Tae-Eum type, they have greater development in their lower bodies, especially in their hips and buttocks. Nevertheless, their overall appearance is well proportioned.<sup>45</sup>

According to SCM, the spleen is in charge of the intake of raw materials such as food and drink whereas the kidneys regulate the process of waste discharge, including bowel

movement and urination. The functions of the lungs and liver are described as dealing with critical bodily substances including energy and body fluid. Within this perspective, the lungs are in charge of the process of consuming energy and body fluid whereas the liver is responsible for the process of producing and storing these inner substances.

Such differences in physiological patterns result in a series of typically distinct characteristics of each constitution, including external appearance, personality traits, the manifestation of healthy and unhealthy states, and response to herbs and acupuncture treatment.<sup>41,55,59</sup>

- **The Tae-Yang type (Greater Yang)** – The energy is concentrated in the upper part of the body and radiates.
  1. Characteristic – Because there is a lot of energy that escapes from the body, the inside of the body tends to become dry due to insufficient moisture and blood.
  2. Health indicators – If urine flows well, no a lot of sweat, no nausea or vomiting.
  3. Main symptoms and diseases – Nervous irritability (insomnia, anxiety, upper fever), lower body energy loss, symptoms that clear saliva collects in the mouth, nausea, vomiting, constipation.
  4. Appearance – The body shape is developed at the upper part of the chest, so the neck is thick and the head is large. Because the liver is weak, the lower body is weak and cannot stand for a long time. Women are often unable to bear children due to poor uterine development. The face is round, the muscles are relatively small and many people have high cheekbones. The forehead is wide and the eyes shine. Ears are big and not gaining much weight.

5. Character/personality – It is not easy to discriminate because this constitution is not so many that it appears as one in one million people. Excellent thinking ability and good relationship with anyone, judgment, and progressive spirit. Strong heroism and pride, so if things do not go as wish, get very angry and hurt their health. With a creative brain and excellent thinking ability, scientists and philosophers are suitable. There is a feeling of indulgence or envy for others because of a sense of superiority. Temper is hurried and impatient, so gets angry and only tries to move forward and seldom withdraws.
6. Neurodevelopment – Sense of hearing
7. Good medicinal herbs – Quince, Chaenomeles Fructus, Acanthopanax Cortex, Phragmites Rhizoma
8. Good food – seafood or vegetable foods that are low in fat and have a light taste with low irritation are suitable. Because the liver function is weak, it is good to eat foods that support the liver.  
 Ex) Grain: Cold noodles, Buckwheat  
       Seafood: Shrimp, Shellfish, Oyster, Abalone, Hermit, Crab, Sea cucumber  
       Vegetable: Water shield, Pine needles  
       Fruit: Grapes, Wild grapes, Persimmon, Cherry, Quince, Orange, Peach
9. Bad food – Spicy and hot food or fatty food is not good. Eating high-calorie and high protein foods can put a strain on the liver and cause diseases such as hepatitis. All meats, oils, flour, millet, soybeans, milk, watermelon, sugar, chestnut, pine nut, ginkgo biloba, bellflower, lotus root, radish, garlic, and deer antler
10. Preferred business – Going ahead, making people believe in themselves, and

finishing things thick and short.

- **The Tae-Eum type (Greater Yin)** – Closing the pores due to strong converging energy, so it breaks the internal and external conditions.
  1. Characteristic – They have a good digestion and absorption function (Sweat, breathing, defecation, urination), but weak circulation and excretion making it easy for the body to become heavier or to gain weight.
  2. Health indicators – Sweat enough, weight gain is not severe, regular diet
  3. Main symptoms and diseases – High blood pressure, stroke, metabolic diseases, diabetes, heart disease, bronchitis, pneumonia, hepatitis, skin diseases such as eczema or hives, irritable bowel syndrome, hemorrhoids, overweight and obesity, respiratory disease (asthma), chronic fatigue syndrome, numbness in hands and feet, palpitations, swelling symptoms.
  4. Appearance – Because of a hyperactive liver and hypoactive lungs, the waist and nose are large, cheekbones appear and there are many enlarged sides. Tall and in good shape. Some are skinny but the skeleton is healthy. Due to weak inhalation, there are many cases of shortness of breath compared to other constitutions. Sometimes the waist is thick and the stomach comes out and looks somewhat arrogant. Many people have a large skeleton in appearance. The limbs and feet are large and the skin is rough. Sweat a lot even if moving the body a little and it is even worse when doing hard work. In the case of women, the body is large and the features are cool, so they look dignified and men often have a rather scary impression.

5. Character/personality – Many things are stubborn and succeed by accomplishing their duties to the end. They hate change and are conservative and family-oriented and like others praise. Qualified as a businessman or politician and can get bad with stubbornness and greed. The attachment to their own is excessive and becomes greed. They speak little and quiet, but excellent at calculating gains and losses. They look gentle on the outside, but insidious on the inside and seldom revealing the inside.
6. Neurodevelopment – Sense of smell
7. Good medicinal herbs – Deer Antlers, Ephedra Herba, Liriopsis Tuber, Schisandrae Fructus, Dioscoreae Rhizoma, Platycodi Radix, Coicis Semen, Puerariae Radix
8. Good food – Because of good gastrointestinal function, animal and vegetable proteins are good. Beef, cool fruit, and especially radish
  - Ex) Grain: Rice, soybeans, sweet potato, pearl barley, peanut, perilla seed
  - Meat: Beef, milk, butter, cheese
  - Seafood: Spawn of a Pollack, snail, cod, seaweed, kelp, laver
  - Vegetable: Radish, bellflower, deadlock, carrot, fern, lotus root, taro, Hemp, mushroom
  - Fruit: Chestnut, pine nut, walnut, ginkgo, apricot, plum
9. Bad food – Obesity, high blood pressure, and constipation are prone, so avoid irritating foods or fatty foods. Chicken, pork, mackerel, shrimp, squid, cabbage, honey
10. Preferred business – Working for others and unity.

- **The So-Yang type (Lesser Yang)** – Heat is concentrated in the chest and stomach, so moisture and essence dry out which makes it easy for constipation.
  1. Characteristic – Because the body has a lot of heat and emotional ups and downs, it is prone to nervous irritability. It is also a healthy constitution that does not usually cause illness. Digestive function is good and inside is hot, so it burns well when nutrients are consumed. Beware of kidneys and bladder diseases, febrile infection diseases, mental illness. A lot of heat inside, so they tend to eat cold foods. Because of the weak urogenital function, women tend to be infertile and men do not have active sexual function.
  2. Health indicators - Good sleep, no constipation or diarrhea, and good urination
  3. Main symptoms and diseases – Sleep disorder, emotional disorder, symptoms of autonomic neuropathy (nervous bladder, hyperhidrosis), reflux esophagitis, skin rash, pruritus, tinnitus, xerophthalmia, lumbago, degenerative arthritis.
  4. Appearance – Big shoulder and good-looking eyes, so there are many handsome men and beautiful women. The chest is developed and the buttocks are weak. The upper body is well developed, but the lower body is weak and light, so the gait is fast. Usually, the head is small and round. The eyes look sharp, the mouth is not large, the lips are thin and the chin is pointed. The skin is white but there is not much shine or sweat.
  5. Character/personality – Very sociable, active, popular with many people, and chivalrous. Good at work, but easily resigned due to a lack of patience.

Qualified as a celebrity, public servant, or company executive. They are impatient, so they tend to work hard but do not finish. They always have doubts that they are afraid of what will happen, but when this grows and becomes fear, it is easy to become forgetful. They look frivolous and they start and finish things quickly, so their work skills are rough and there are many mistakes and often get tired of work. They also like to sacrifice and work for others and feel rewarding.

6. Neurodevelopment – Sense of sight
7. Good medicinal herbs – Rehmannia Glutinosa, Corni Fructus, Hoeven, Alismatis Rhizoma, Osterici Radix, Angelicae Pubescentis Radix
8. Good food – The stomach is strong and digestion is good. With a lot of heat inside of their body, they enjoy cold food even in winter but do not get sick. Fresh and cold foods are good.

Ex) Grain: Barley, red bean, green gram

Meat: pork, egg, duck meat

Seafood: oyster, sea cucumber, sea squirt, abalone, crab

Vegetable: Cabbage, cucumber, lettuce, burdock

Fruit: Watermelon, melon, strawberry, banana, pineapple

9. Bad food – Avoid foods that produce heat as they already have a lot of heat inside. Ginger, green onion, garlic, pepper, mustard, curry, chicken, goat, honey, ginseng.
10. Preferred business – Not working long in one place, and work with a lot of talking.

- **The So-Eum type (Lesser Yin)** – Because the spleen and stomach's functions are weak, digestion is significant.
  1. **Characteristic** – The warm energy is weak, so it is easy to get cold and weak. The stomach is always weak and cold, so indigestion and diarrhea are frequent. When waking up after sleep, the body is prone to frown and there are many types of pain such as headache and neuralgia. It is the longest-lived constitution among the Sasang constitutions because the kidneys are developed and they filter wastes well in the body.
  2. **Health indicators** – Good digestion, less sweating, good bowel movements.
  3. **Main symptoms and diseases** – Digestive dysfunction, cold hands, and feet, migraine, dizziness, frequent fatigue, autoimmune disease, neurological disease.
  4. **Appearance** – The spleen is weak and the kidneys are strong, so the hips are large and the mouth is well-formed and the teeth are large. Outwardly, the top and bottom are well balanced and the body is generally small. When walking, the energy is insufficient, so the upper body is bowed forward. Women are pretty and had a lot of charm. The forehead is slightly protruding, the features are not large and the impression is modest. The skin is soft and sweat is low and gait is natural and gentle.
  5. **Character/personality** – Always calm, willing and cautious. Persistent, patient, and attentive. Suitable for a professor or religious leader but sometimes feeling impatient and anxious. They have a lot of worries, so heart feels stuffy. Reason precedes emotion and they tend to be selfish. Introverted and passive,

reluctant to take on adventures, and also tend to fall into own work. Intelligent, good judgment, organized and clever. They hate to be touched by what they do and are jealous of what others do well.

6. Neurodevelopment – Sense of taste
7. Good medicinal herbs – Ginseng, Ginger, Atractylodis Rhizoma Alba, Glycurrhizae Radix, Cinnamomi Cortex, Citri Pericarpium, Zingiberis Rhizoma Crudusaa
8. Good food – Because the inside is cold, hot food is good. Winged animals are 2 degrees higher than human body temperature, so the chicken is good. Fishes with scales such as Pollock that live in cold water are good.

Ex) Grain: Rice, perilla, potato

Meat: Chicken, goat, lamb, honey

Seafood: Pollock, sea bream, croaker, anchovy, flounder, loach

Vegetable: Spinach, cabbage, parsley, green onion, garlic, ginger, pepper,

Mustard, curry

Fruit: Apple, tangerine, tomato, peach, jujube

9. Bad food – Fatty, cold and raw foods that are difficult to digest are more likely to cause diarrhea. Cold noodle, melon, watermelon, cold milk, ice cream, beer, barley rice, pork, squid, flour food
10. Preferred business – Finely crafted work, working with numbers, or making handicrafts.

## II. MATERIALS AND METHODS

### 1. Search Strategy and data sources

The following 5 electronic databases were searched in either English or Korean:

Pubmed ([www.pubmed.gov](http://www.pubmed.gov)), Ebsco ([www.ebscohost.com](http://www.ebscohost.com)), National Discovery for science leaders ([www.ndsl.kr](http://www.ndsl.kr)), Research information service system ([www.riss4u.net](http://www.riss4u.net)), Korea Institute of Science and Technology Information ([www.koreascience.or.kr](http://www.koreascience.or.kr))

The keywords entered were ‘Sasang’, ‘Sasang Constitution’, ‘Sasang Constitutional Medicine’, ‘Sasang typology’ as well as the related words such as urination, perspiration, defecation, digestive function, and psychological features in either English or Korean. All articles published from 2000 to 2020 were included in the screening.

### 2. Article selection

#### -Inclusion

Research articles that used any type of questionnaire or examination to investigate significant differences of the Sasang constitutions related to physical, mental, and social well-being categories.

- Articles presenting specific and detailed physical well-being only with urination, perspiration, defecation, and digestive function were included along with articles presenting specific and detailed in terms of mental and social well-being with psychological features pertaining to Sasang Constitutional Medicine.

#### -Exclusion

Hypotheses, commentary articles, research without validated psychometric inventory, and textbooks.

### **3. Data extraction**

All selected articles were reviewed and data from the articles were extracted according to the predefined criteria. Data pertaining to demographic features such as the number of participants, gender distribution, and age were collected. Moreover, the method of the Sasang constitution classification and the prevalence were also provided. Significantly different constitutional type-specific features of the Sasang constitutions in terms of physical, mental, and social well-being were systematically organized to examine for comparison.

### **4. Method**

#### **- Data analysis**

Significant differences in terms of physical, mental, and social well-being of the Sasang constitutions were obtained by the following process:

First, the articles were classified into physical, mental, and social well-being categories depending on the symptom, namely, urination, perspiration, defecation, digestive function, and psychological features, and then, the major features of each constitutional type-specific clinical symptom were extracted and organized for comparison.

Finally, the distinct physiological and psychological mechanisms were elucidated as well as their meanings for the potential effects of Korean Sasang Constitutional Medicine on quality of life through predictive, preventive, and personalized medicine along with

discovering oneself in terms of physical, mental, and social well-being were revealed.

### **III. RESULTS**

#### **1. Article selection**

A total of 430 potentially relevant articles were identified from the five databases. 164 articles were removed as duplicates and 185 articles were removed as irrelevant after reviewing the full text. Subsequently, one article was included in manual search and 43 articles were excluded because they failed to meet the inclusion criteria.

Finally, 39 articles were included and organized for the review. (Figure 2)

#### **2. Demographic characteristics of participants**

The demographic characteristics of participants and the Sasang constitution classification are described in Tables 3-1, 3-2. Most studies were conducted with Koreans except for two, which employed Vietnamese and Japanese participants. As for the gender of participants, 30 studies dealt with both males and females, 9 studies incorporated only one gender, 4 employed men, and 5 employed women.

#### **3. Sasang constitution classification**

As for the Sasang constitution classification, various methods were used in the studies, such as the Questionnaire for the Sasang Constitution Classification (QSCC) version I and II, the modified QSCC, diagnosis by Sasang constitutions, clinical specialist or general practitioner, Sasang constitutional type-specific medication response, measurements of face and body shape, and arbitrary tools by the authors. Twenty-four

studies used only one classification method, whereas others used a combination of two or more methods for diagnosis. Only eight articles showed the constitutional type-specific feature of the Tae-Yang type.

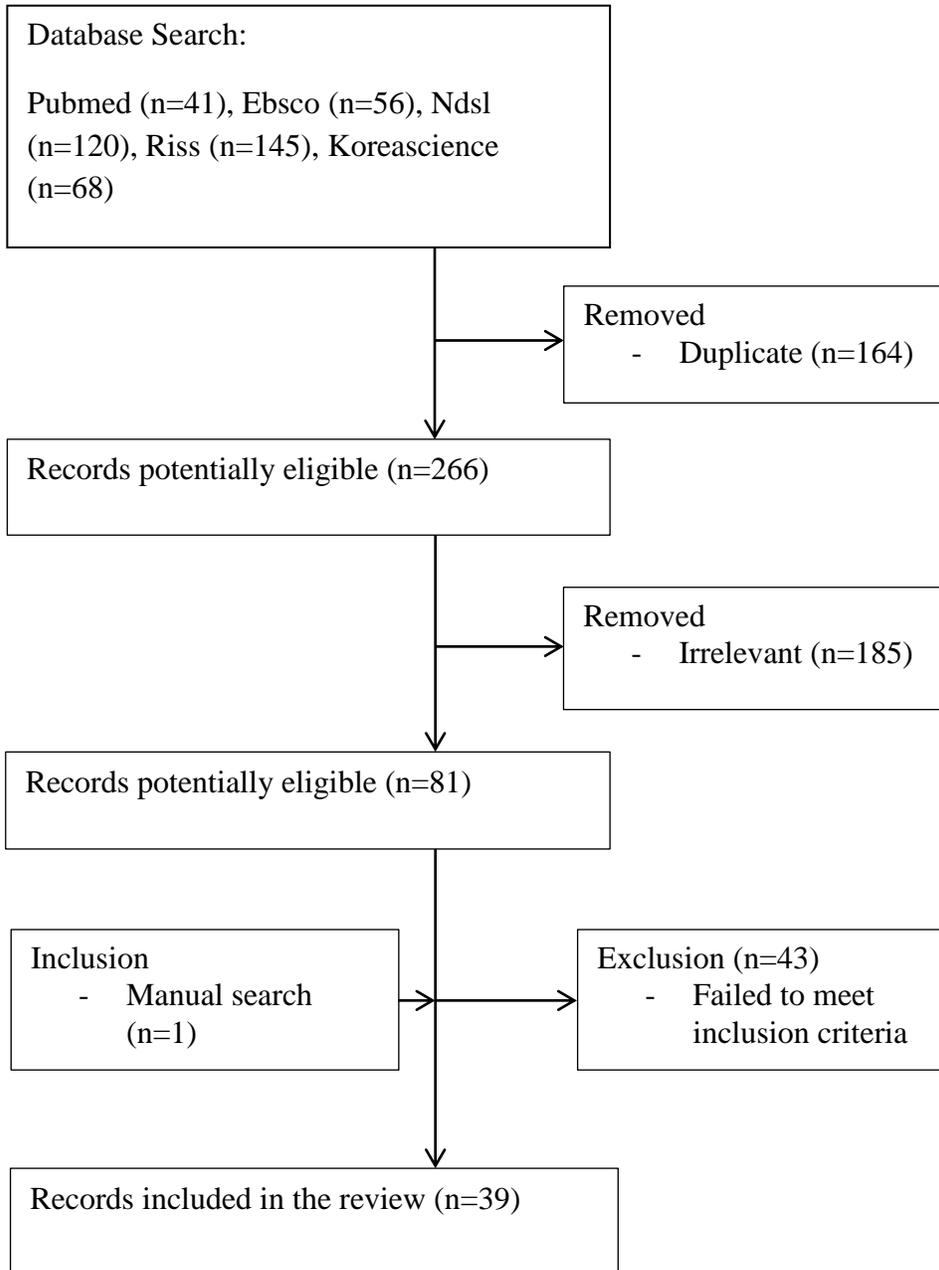


Figure 2. Schematic Diagram of Study Design

Table 3.1 – Demographic features of the articles reviewed

References	Demographic Features				Sasang constitution classification	
	Participants (male, female)	Characteristics of participants	Age (y)	Statistical analysis	Method	Prevalence (TY, SY, TE, SE)
Jang ES <i>et al</i> (2007) <sup>1</sup>	418 (168, 250)	Outpatients	13-75	Chi-square test	Clinical specialist, Drug response	0, 126, 191, 101
Baek YH <i>et al</i> (2009) <sup>2</sup>	1241 (476, 765)	Outpatients	10-80	Chi-square test	Clinical specialist	0, 389, 541, 311
Kim JJ <i>et al</i> (2005) <sup>3</sup>	1229 (529, 700)	Outpatients	38.6 (7-88)	Logistic analysis	Clinical specialist	14, 365, 361, 489
Park HJ <i>et al</i> (2006) <sup>4</sup>	1229 (529, 700)	Outpatients	N.A.	Logistic analysis	Clinical specialist	14, 365, 361, 489
Jang ES <i>et al</i> (2009) <sup>5</sup>	315 (0, 315)	Outpatients	10-80	ANOVA	Clinical specialist	0, 109, 124, 82
Kim K <i>et al</i> (2010) <sup>6</sup>	338 (307, 295)	Healthy Individuals	20-29 60-69	Chi-square test	Clinical specialist QSCC II	0, 131, 257, 214
Jung SO <i>et al</i> (2009) <sup>7</sup>	99 (69, 30)	College students	N.A.	ANOVA	QSCC II	Male: 0, 14, 17, 38 Female: 0, 9, 6, 15
Kim YY <i>et al</i> (2011) <sup>8</sup>	2629 (973, 1656)	Outpatients	>10	Chi-square test	Clinical specialist, Drug response	0, 885, 1061, 683
Kwon JH <i>et al</i> (2013) <sup>9</sup>	170 (62, 108)	Vietnamese Healthy individuals	20-80	Chi-square test	Clinical specialist	0, 51, 62, 57
Shin SW <i>et al</i> (2013) <sup>10</sup>	9213 (4750, 4463)	Obesity patients	45.6 ±11.1	Chi-square test	Clinical specialist, QSCC II	0, 2974, 4281, 1958
Kim HJ <i>et al</i> (2009) <sup>11</sup>	1523	Outpatients	9-85	Chi-square test	Clinical specialist, QSCC II	0, 514, 603, 406
Choi JY <i>et al</i> (2002) <sup>12</sup>	504 (214, 290)	Outpatients	39.9 (10- 80)	Chi-square test	Clinical specialist	8, 125, 148, 223
Choi JY <i>et al</i> (2002) <sup>13</sup>	504 (214, 290)	Outpatients	39.9 (10- 80)	Chi-square test	Clinical specialist	8, 125, 148, 223
Kim YY <i>et al</i> (2012) <sup>14</sup>	144 (68, 76)	Japanese healthy individuals	24.5	Chi-square test	Arbitrary tool	0, 53, 28, 63
Baek YH <i>et al</i> (2010) <sup>15</sup>	171 (171, 0)	Outpatients	10-80	ANOVA	Clinical Specialist	0, 46, 70, 55
Baek TH <i>et al</i> (2004) <sup>16</sup>	588(248, 340)	Outpatients	39.1	Chi-square test	Clinical specialist	10, 136, 175, 267

(continued)

Ham TI <i>et al</i> (2004) <sup>17</sup>	101 (54, 47)	Stroke inpatients	SY (64±11.05) TE (60.28±12.47) SE (66.00±10.25)	Chi-square test	Clinical specialist, QSCC II, Drug response	0, 52, 39, 10
Lee YO <i>et al</i> (2002) <sup>18</sup>	584 (300, 284)	Outpatients	N.A.	Chi-square test	QSCC II	0,100,268,216
Lee SK <i>et al</i> (2004) <sup>19</sup>	100 (0, 100)	Healthy Individuals	30-50	N.A.	Clinical specialist, QSCC II, Face measures, Body measures	0, 30, 30, 40
Lee YK <i>et al</i> (2000) <sup>20</sup>	280 (109, 171)	Outpatients	N.A.	Unpaired t- test	General practitioner	0, 35, 58, 187
Lee JH <i>et al</i> (2004) <sup>21</sup>	100 (42, 58)	Dyspepsia outpatients	41.69	N.A.	QSCC II	0, 31, 32, 37
Kim YK <i>et al</i> (2002) <sup>22</sup>	84 (35, 49)	Outpatients	Male: 69.8±3.6 Female: 68.6±3.5	ANOVA	Clinical specialist, QSCC II	0, 23, 41, 19
Baek TH (2004) <sup>23</sup>	100 (35, 65)	Functional Dyspepsia patients	Male: 43.43 Female: 47.08	Chi-square test	Clinical specialist, QSCC I	0, 35, 27, 48
Cha NH <i>et al</i> (2005) <sup>24*</sup>	825 (825, 0)	Industrial workers	36.5 (23-57)	X <sup>2</sup> test	Clinical specialist QSCC II	0, 219, 315, 291

Reference<sup>24\*</sup> - Included inventory: PWI (Psychosocial Well-being Index) for psychological features

ANOVA: Analysis of Variance; QSCC I, II: Questionnaire for Sasang Constitution Classification I, II; SE: So-Eum; SY: So-Yang; TE: Tae-Eum; TY: Tae-Yang

Table 3.2 – Demographic features of the articles reviewed

References	Inventory	Demographic features				Sasang constitution classification	
		Participants (male, female)	Characteristics of participants	Age (y)	Statistical analysis	Method	Prevalence (TY, SY, TE, SE)
Chae H <i>et al</i> (2003) <sup>25</sup>	MBTI	79 (69, 0)	College students	25.1 ±4.9	Cross- sectional time- series regression analysis	QSCC II	0, 25, 23, 31
Lee JH <i>et al</i> (2007) <sup>26</sup>	MBTI	66 (21, 45)	College students	23.8 ±3.7	ANOVA	QSCC II	0, 12, 10, 44
Park HI <i>et al</i> (2000) <sup>27</sup>	NEO-PI-R	382 (191, 191)	College students	N.A.	ANOVA	QSCC II	51, 112, 97, 122
Cho SH <i>et al</i> (2005) <sup>28</sup>	NEO-PI-R	155 (108, 47)	College students	N.A.	ANOVA	QSCC II	0, 46, 42, 67
Park SH <i>et al</i> (2011) <sup>29</sup>	TCI-RS	97 (40, 57)	Outpatients	47.6 ±10.5	ANOVA	Clinical specialist	1, 31, 41, 15
Kang MS <i>et al</i> (2015) <sup>30</sup>	TCI	106 (44, 62)	Healthy individuals	25.66 ±4.93	ANOVA	Clinical specialist, TS-QSCD	0, 30, 45, 31
Sung WY <i>et al</i> (2012) <sup>31</sup>	TCI	108 (54, 54)	Healthy individuals	25.60 ±4.67	ANOVA	Clinical specialist, TS-QSCD	0, 32, 45, 31
Choi DS <i>et al</i> (2011) <sup>32</sup>	TCI	131 (56, 75)	Healthy Individuals	23.06 ±2.89	ANOVA	Clinical specialist, TS-QSCD	0, 35, 66, 30
Sung WY <i>et al</i> (2011) <sup>33</sup>	JTCI	89 (0, 89)	Junior High school students	14-15	ANOVA	TS-QSCD	0, 37, 30, 22
Seo W <i>et al</i> (2003) <sup>34</sup>	STAI	63 (54, 9)	Healthy Individuals	Male (26.19) Female (28.11)	ANOVA	Clinical specialist, QSCC II	0, 11, 35, 17
Lee SY <i>et al</i> (2007) <sup>35</sup>	MMPI	29 (0, 29)	Dysmenorrhea patients	28.1	ANOVA	QSCC II	0, 4, 15, 10
Seo BY <i>et al</i> (2003) <sup>36</sup>	PWI	479 (479, 0)	Industrial workers	N.A.	ANOVA	Clinical specialist, Arbitrary questionnaire	0, 136, 188, 155
Cha NH <i>et al</i> (2005) <sup>24*</sup>	PWI	825 (825,0)	Industrial workers	36.5 (23-57)	x <sup>2</sup> test	Clinical specialist, QSCC II	0,219,315,291
Choi EY <i>et al</i> (2008) <sup>37</sup>	SOS	226 (0, 226)	Female college students	N.A.	ANOVA	Modified QSCC II	9, 28, 45, 18 (%)

(continued)

Chang JY <i>et al</i> (2012) <sup>38</sup>	SOS	30 (19, 11)	Oriental medicine students	23.47	ANOVA	QSCC II	0, 8, 13, 9
Park HC <i>et al</i> (2017) <sup>39</sup>	CST	125 (58, 67)	College students	24.8 ±4.0	ANOVA	TS-QSCD	0, 43, 45, 37

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Reference<sup>24\*</sup> - duplicated for inventory, PWI

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ANOVA: Analysis of Variance; QSCC II: Questionnaire for Sasang Constitution Classification II; TS-QSCD: Two-Step Questionnaire for Sasang Constitution Diagnosis; SE: So-Eum; SY: So-Yang; TE: Tae-Eum; TY: Tae-Yang

#### 4. Methods for statistical analysis

As for the statistical methods for data analysis, ANOVA (analysis of variance) was used in 18 studies, followed by chi-square test in 14 studies, logistic analysis in 2 studies, unpaired t-test in one study,  $\chi^2$  test in one study, cross-sectional time-series regression analysis in one studies, and two studies did not use any statistical analysis.

#### 5. Urination

Six articles<sup>1-6</sup> showed clinical data on urination. (Table 4)

One article<sup>2</sup> showed that the So-Eum type has the highest frequency of urination, followed by the So-Yang and Tae-Eum types. Three articles<sup>1,3,5</sup> evaluated the color of urine as follows: One study<sup>1</sup> noted that yellow-colored urine is frequently shown in decreasing order of the Tae-Eum, So-Eum, and So-Yang types while one article<sup>3</sup> showed that the Eum types have a higher frequency with clear colored urine compared to the Yang type. Another<sup>5</sup> showed that the clearer urine color, the higher level of satisfaction on the quality of life improves in the order of the Tae-Eum, So-Eum, and So-yang types.

Additionally, two articles<sup>2,4</sup> reported that the Tae-Eum type or both the Tae-Yang and Tae-Eum types have a higher frequency with foamy urine while one article<sup>3</sup> reported that the Yang types have more foamy urine than the Eum types.

Table 4 - Sasang constitutional type-specific features in urination

References	Frequency of urination	Color of urination	Foam of urination
Jang ES <i>et al</i> (2007) <sup>1</sup>	N.A.	Yellow (TE>SE>SY**: 47.4%, 41.2%, 29.2%)	N.S.
Beak YH <i>et al</i> (2009) <sup>2</sup>	SE>SY>TE*: 72.2%, 52.5%, 41.3%	N.A.	TE>SY>SE*: 12.4%, 6.9%, 6.8%
Kim JJ <i>et al</i> (2005) <sup>3</sup>	N.S.	Clear (Eum>Yang, p<0.1)	Yang>Eum (p<0.1)
Park HJ <i>et al</i> (2006) <sup>4</sup>	N.S.	N.S.	TY+TE>SY+SE (p<0.1)
Jang ES <i>et al</i> (2009) <sup>5</sup>	N.S.	Clear vs. Not clear (TE>SE>SY*, in SF-36)	N.S.
Kim K <i>et al</i> (2010) <sup>6</sup>	N.S.	N.S.	N.A.

\*: p<0.05; \*\*: p<0.01

N.A.: not available; N.S.: not significant; SE: So-Eum; SF-36: 36-Item Short-Form Health Survey; SY: So-Yang; TE: Tae-Eum; TY: Tae-Yang; Eum: Eum (Yin) types; Yang: Yang types

## 6. Perspiration

Ten articles<sup>1,2,4,6-12</sup> showed clinical data in perspiration according to the Sasang constitutions. As for the amount of sweat, nine articles<sup>1,2,4,6,7,9-12</sup> showed that the Tae-Eum type sweats excessively while the So-Eum type sweats less than others, yet one article<sup>9</sup> identified that the So-Yang type sweats less. Six articles<sup>1,2,4,7,11,12</sup> showed significant differences of the Sasang constitutions dealt with the feeling after sweating and these<sup>1,2,4,7,11,12</sup> showed that the Tae-Eum type feels fresh after sweating followed by the So-Yang and So-Eum types while the So-Eum type feels fatigued or tired after sweating, followed by the So-Yang and Tae-Eum types. In addition, one article<sup>7</sup> reported that the Tae-Eum type feels refreshed after sweating when not feeling well and six articles<sup>2,4,7,8,11,12</sup> reported diverse pathological features of sweating. Three articles<sup>2,4,11</sup> showed that the Tae-Eum type sweats during meals followed by the SoYang and So-Eum types and another three articles<sup>4,7,12</sup> showed that the So-Eum type experiences cold sweats in poor condition and it makes the body condition worse quickly. In particular, one article<sup>12</sup> reported that the So-Yang type feels hot overall and sweats at night when in poor condition followed by the Tae-Eum and So-Eum type. (Table 5)

Table 5 - Sasang constitutional type-specific features in perspiration

References	Amount of sweat	Pathological features of sweat	Feeling after sweat
Jang ES <i>et al</i> (2007) <sup>1</sup>	Excessive (TE>SY>SE***: 40.8%, 28.1%, 13.5%) Less (SE>SY>TE***: 44.8%, 21.9%, 14.7%)	N.A.	Refreshed (TE>SY>SE***: 36.5%, 33.9%, 14.6%) Fatigue (SE>TE>SY***: 37.1%, 22.0%, 16.1%)
Baek YH <i>et al</i> (2009) <sup>2</sup>	Excessive (TE>SY>SE***: 39.6%, 25.5%, 14.1%) Less (SE>SY>TE***: 45.1%, 27.3%, 19.3%)	Sweats during meals (TE>SY>SE*: 24.4%, 19.9%, 13.5%)	Fresh (TE>SY>SE***: 49.8%, 37.5%, 24.1%) Fatigue (SE>SY>TE***: 45.6%, 31.4%, 22.1%)
Park HJ <i>et al</i> (2006) <sup>4</sup>	Less (SY+SE>TY+TE, p<0.1)	Sweats at night (TY+TE>SY+SE, p<0.1) Break out in a cold sweat during physical exhaustion (SY+SE>TY+TE, p<0.1)) Sweats during meals (TY+TE>SY+SE, p<0.1))	Not fresh (SY+SE>TY+TE, p<0.1)
Kim K <i>et al</i> (2010) <sup>6</sup>	20s and 60s overall : Excessive (TE>SY>SE***: 39.7%, 28%, 14.5%) 20s: Excessive (TE>SY>SE***: 38.1%, 24.6%, 7.8%) 60s: N.S.	N.A.	N.S.

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(continued)

Jung SO <i>et al</i> (2009) <sup>7</sup>	A lot (TE>SY>SE**: 69.6%, 26.1%, 18.9%)	Experiences more cold sweats when the sickness worsens (SE>SY>TE: 45.3%, 30.4%, 8.7%)	Refreshed (TE>SY>SE**: 69.6%, 26.1%, 18.9%) Tired (SE>SY>TE**: 56.6%, 30.4%, 13%) Refreshed after sweating when not feeling good (TE>SY>SE**: 60.9%, 34.8%, 17.0%)
Kim YY <i>et al</i> (2011) <sup>8</sup>	N.A.	Symptomatic involvement during physical deterioration (TE>SY>SE***: 16.5%, 9.9%, 8.5%)	N.A.
Kwon JH <i>et al</i> (2013) <sup>9</sup>	Excessive (TE>SY>SE***: 42%, 34.6%, 23.5%) Less (SY>SE>TE***: 55.0%, 25.0%, 20.0%)	N.A.	N.A.
Shin SW <i>et al</i> (2013) <sup>10</sup>	Excessive (TE>SY>SE***: 60.9%, 52.3%, 34.5%) Less (SE>SY>TE***: 65.5%, 47.7%, 39.1%)	N.A.	N.A.

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(continued)

Kim HJ <i>et al</i> (2009) <sup>11</sup>	Excessive (TE>SY>SE***: 36.4%, 25.0%, 15.5%) Less (SE>SY>TE***: 40.4%, 29.7%, 28.6%)	Sweats when having a meal (TE>Non-TE***)	Fresh (TE>SY>SE***: 47.3%, 36.7%, 25.1%) Fatigue (SE>SY>TE***: 41.1%, 29.3%, 21.4%)
Choi JY <i>et al</i> (2002) <sup>12</sup>	Excessive (TE>SY>SE***: 45.1%, 40.4%, 17.8%) Less (SE>SY>TE***: 46.7%, 30.3%, 23.3%)	Sweat less overall, but gets cold sweats in poor condition, then the physical condition gets worse quickly (SE>SY>TE>TY**: 32.7%, 20.8%, 16.4%, 12.5%) Feels hot overall, and sweats at night when in poor condition (SY>TE>SE>TY**: 24.8%, 18.4%, 10.3%, 0%)	Fresh (SY>TE>SE***: 43.8%, 37.2%, 20.0%) Fatigue (SE>TE>SY*: 43.7%, 24.5%, 21.3%)

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\*: p<0.05; \*\*: p<0.01; \*\*\*: p<0.001

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N.A.: not available; N.S.: not significant; SE: So-Eum; SY: So-Yang; TE: Tae-Eum; TY: Tae-Yang

## 7. Defecation

Ten studies<sup>6,9,13,10,1,2,14,4,15,3</sup> had clinical data in defecation. Two studies<sup>4,6</sup> showed that the So-Eum type has tender stool<sup>6</sup>, or diarrhea in poor condition<sup>4</sup> along with the So-Yang type while two other studies<sup>13,2</sup> showed that the Tae-Eum type tends to have partly solid<sup>13</sup>

or thick stool<sup>2</sup> than other Sasang constitutions. One study<sup>14</sup> showed that the Tae-Eum type has gold-colored stool followed by the So-Eum and So-Yang types.

Five articles<sup>9, 10, 4, 15, 3</sup> reported the frequency of defecation. The So-Eum type tends to have lower than other types<sup>9, 10, 4</sup> and one study<sup>3</sup> indicated that the Eum type has a lower frequency of defecation compared to the Yang types. Another study<sup>15</sup> showed that irregular defecation influences the So-Yang type followed by the Tae-Eum and So-Eum types on quality of life. Three studies<sup>1, 14, 4</sup> indicated the tenesmus after defecating. One study<sup>1</sup> noted that the Tae-Eum type feels good after defecating followed by the So-Yang and So-Eum types, but also discomfort in the Tae-Eum type followed by the So-Eum and So-Yang types. Another study<sup>14</sup> noted that the So-Yang type mainly has higher tenesmus while the other study<sup>4</sup> noted that the Tae-Yang and Tae-Eum types have discomfort with constipation compared to the So-Yang and So-Eum Types. As a result, it is difficult to confirm the significant differences by the Sasang constitutions that are maintained under a certain level in the tenesmus. (Table 6)

Table 6 - Sasang constitutional type-specific features in defecation

References	Frequency of defecation	Condition of stool	Tenesmus
Kim K <i>et al</i> (2010) <sup>6</sup>	N.S.	Tender at all ages (SE>SY>TE***: 24.4%, 10.7%, 9.3%) Tender at 20s (SE>SY>TE***: 23.4%, 9.8%, 5.0%) 60s: N.S.	N.A.
Kwon JH <i>et al</i> (2013) <sup>9</sup>	Sometimes low (SE>SY>TE*: 50.0%, 25.0%, 25.0%) Normal (TE>SY>SE*: 41.0%, 32.0%, 27.0%)	N.A.	N.A.
Choi JY <i>et al</i> (2002) <sup>13</sup>	N.A.	Partly solid (TE>SY>SE*: 20.3%, 18.4%, 9.9%)	N.S.
Shin SW <i>et al</i> (2013) <sup>10</sup>	Sometimes low (SE>TE>SY**: 24.5%, 16.6%, 9.9%)	N.A.	N.A.
Jang ES <i>et al</i> (2007) <sup>1</sup>	N.A.	N.A.	Good (TE>SY>SE***: 35.8%, 33.1%, 22.2%) Discomfort (TE>SE>SY**: 27.3%, 22.2%, 16.1%)
Baek YH <i>et al</i> (2009) <sup>2</sup>	N.A.	Thick (TE>SY>SE*: 13.8%, 10.8%, 7.2%)	N.A.

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(continued)

Kim YY <i>et al</i> (2012) <sup>14</sup>	N.S.	Gold-colored stool (TE>SE>SY*: 35.7%, 34.9%, 15.1%)	SY>SE>TE*: 15.1%, 6.3%, 0%)
Park HJ <i>et al</i> (2006) <sup>4</sup>	TY+TE>SY+SE (p<0.1)	Diarrhea in poor condition (SY+SE>TY+TE, p<0.1)	Discomfort with constipation (TY+TE>SY+SE, p<0.1)
Baek YH <i>et al</i> (2010) <sup>15</sup>	In SF-36, difference between regular and irregular: SY>TE>SE*)	N.A.	N.A.
Kim JJ <i>et al</i> (2005) <sup>3</sup>	Low (Eum>Yang, p<0.1)	N.A.	N.A.

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\*: p<0.05; \*\*: p<0.01; \*\*\*: p<0.001

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N.A.: not available; N.S.: not significant; SE: So-Eum; SF-36: 36-Item Short Form Health Survey; SY: So-Yang; TE: Tae-Eum; TY: Tae-Yang; Eum: Eum (Yin) types; Yang: Yang types

## 8. Digestive function

Fourteen studies<sup>1, 2, 16, 4, 17, 6, 8, 18-24</sup> showed clinical data in digestive function. Two studies<sup>2, 4</sup> showed that the Tae-Eum type has good digestive functional status while the other two studies<sup>6, 19</sup> identified the So-Yang type. As for the poor digestive function, eight studies<sup>16-20, 22-24</sup> showed that the So-Eum type has the most symptoms.

In particular, one study<sup>16</sup> noted that the So-Eum type has nervousness-induced indigestion. Two studies<sup>20, 21</sup> used endoscopic examinations to test the incidence of digestive disease. Based on the result of endoscopic examinations, one study<sup>21</sup> showed that the proportion of gastritis is higher in the Tae-Eum type compared to others, but the

other two studies<sup>20, 22</sup> showed that the So-Eum type has a higher proportion of gastritis than others. It was noted that the So-Eum type has a higher frequency of digestive diseases than other types based on the five studies.<sup>17, 20-22, 24</sup> Additionally, there were eight studies<sup>1, 2, 4, 17, 6, 8, 18</sup> asking whether the qualitative status of the appetite is generally good or poor. Seven articles<sup>1, 2, 4, 17, 6, 8, 18, 19</sup> showed that the Tae-Eum type has a good appetite while one article<sup>19</sup> showed that the So-Yang type. Related to the result of the poor digestive function, five articles<sup>1, 2, 17, 8, 18</sup> showed that the So-Eum type has poor appetite compared to other types. Concerning the meal amount, four articles<sup>1, 2, 16, 4</sup> noted that the Tae-Eum type has the biggest amount of meal than other types whereas two articles<sup>2, 17</sup> showed that the So-Eum type has a little amount of meal followed by the So-Yang and Tae-Eum types. (Table 7)

Table 7 - Sasang constitutional type-specific features in digestive function

References	Digestion	Appetite	Meal amount
Jang ES <i>et al</i> (2007) <sup>1</sup>	N.A.	Good (TE>SY>SE*: 26.6%, 19.7%, 13.9%) Poor (SE>SY>TE*: 14.9%, 12.6%, 6.8%)	Big (TE>SY>SE*: 18.6%, 9.2%, 5.9%)
Baek YH <i>et al</i> (2009) <sup>2</sup>	Good (TE>SY>SE*: 79.1%, 73.9%, 63.6%)	Good (TE>SY>SE*: 45.5%, 40.5%, 29.4%) Poor (SE>SY>TE*: 14.5%, 10.1%, 8.0%)	Much (TE>SY>SE*: 17.7%, 10.0%, 5.4%) A little (SE>SY>TE*: 23.7%, 17.0%, 12.0%)
Baek TH <i>et al</i> (2004) <sup>16</sup>	Poor due to cold or fatty foods (SE>SY>TE*: 31.8%, 23.7%, 18.9%) Poor since childhood (SE>SY>TE**: 12.4%, 5.9%, 4.0%) Digestive upset (SE>SY>TE**: 19.9%, 12.6%, 6.3%) Nervousness- induced indigestion (SE>SY>TE**: 51.9%, 40.0%, 33.7%)	N.A.	Overeating (TE>SY>SE**: 30.3%, 22.2%, 13.9%)
Park HJ <i>et al</i> (2006) <sup>4</sup>	Good (TY+TE>SY+SE, p<0.1)	Good (TY+TE>SY+SE, p<0.1)	Big (TY+TE>SY+SE, p<0.1)
Ham TI <i>et al</i> (2004) <sup>17</sup>	Poor (SE>SY>TE*: 30.0%, 13.5%, 5.1%) Bloating often (SE>TE>SY*: 50%, 25.6%, 15.4%)	Good (TE>SY>SE*: 69.2%, 50.0%, 40.0%) Poor (SE>SY>TE*: 30.0%, 7.7%, 5.1%)	Small (SE>SY>TE*: 50.0%, 13.5%, 10.3%)

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(continued)

	Stomachache often (SE>TE>SY*: 30.0%, 10.3%, 3.8%)		
Kim K <i>et al</i> (2010) <sup>6</sup>	Good 20s and 60s overall (SY>TE>SE*: 86.4%, 82.1%, 71.0%) 20s (SY>TE>SE: 82.0%, 77.7%, 64.9%, p<0.1) 60s (SY>TE>SE: 92.4%, 87.3%, 79.6%, p<0.1)	Good 20s and 60s overall (TE>SY>SE*: 77.8%, 72.9%, 51.9%) 20s (SY>TE>SE*: 82.0%, 81.3%, 59.7%) 60s (TE>SY>SE*: 73.7%, 60.9%, 40.7%)	N.A.
Kim YY <i>et al</i> (2011) <sup>8</sup>	Symptomatic involvement during physical deterioration (SE>SY>TE*: 55.9%, 35.3%, 28.5%)	Poor (SE>SY>TE*: 15.3%, 9.8%, 7.0%)	N.A.
Lee YO <i>et al</i> (2002) <sup>18</sup>	Poor (SE>TE>SY*: 32.9%, 23.9%, 22.0%)	Poor (SE>SY>TE**: 14.4%, 14%, 6.0%)	N.A.
Lee SK <i>et al</i> (2004) <sup>19</sup>	Stomachache (SE>SY>TE**: 20%, 6.7%, 3.3%) Good (SY>TE>SE**: 36.7%, 26.8%, 10%)	Good (SY>TE>SE, p<0.1)	N.A.
Lee YK <i>et al</i> (2002) <sup>20</sup>	Gastritis (SE>TE>SY: 19, 6, 2) Peptic ulcer (SE>TE>SY: 7, 3, 0) Gastroptosis (SE>SY>TE: 17, 3, 0) Helicobacter pylori (SE>TE>SY: 21, 12, 6) Overall SE type has more gastric disease	N.A.	N.A.

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(continued)

	(SE>TE>SY: 66, 22, 11)		
Lee JH <i>et al</i> (2004) <sup>21</sup>	Gastritis (TE>SE>SY*: 36.71%, 32.91%, 30.38%) Gastric ulcer (SE>TE, SY*:53.84%, 23.8%, 23.8%)	N.A.	N.A.
Kim YK <i>et al</i> (2002) <sup>22</sup>	Gastritis (SE>SY>TE: 57.9%, 52.2%, 43.9%, P=0.573)	N.A.	N.S.
Baek TH (2004) <sup>23</sup>	Indigestion (SE>TE>SY*: 48%, 40%, 25%) Male (SE, TE>SY*: 40%, 40%, 20%) Female (SE>SY>TE*: 52.3%, 27.7%, 20%)	N.A.	N.A.
Cha NH <i>et al</i> (2005) <sup>24</sup>	Physical symptoms of digestive system (SE>TE>SY***: 75.6%, 56.5%, 53.0%)	N.A.	N.A.

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\*: p<0.05; \*\*: p<0.01; \*\*\*: p<0.001

N.A.: not available; N.S.: not significant; SE: So-Eum; SY: So-Yang; TE: Tae-Eum; TY: Tae-Yang

## **9. Psychological features**

Significantly contrasting differences between the So-Yang and So-Eum types were mainly found in a majority of the studies. (Table 8)

### **9.1. MBTI (Myers-Briggs Type Indicator)**

There were two studies<sup>7, 23</sup> that examined the MBTI to assess personality traits.

With regard to the Extroversion to Introversion (EI), a significant difference between the So-Yang and So-Eum types was found. The So-Yang type was found to be significantly more extroverted while the So-Eum type demonstrated a significant tendency to be more introverted. In the Judging to Perceiving (JP) dichotomy, the So-Yang type was found to be significantly more perceiving while the So-Eum type demonstrated a significant tendency to be judging. The Tae-Eum type demonstrated positioning in between the So-Yang and So-Eum types.

### **9.2. NEO-PI-R (NEO Personality Inventory-Revised)**

The NEO-PI-R was used in two studies<sup>27, 28</sup> In Neuroticism, the So-Yang type scored significantly lower while the So-Eum type scored significantly higher. In Extroversion, The So-Yang type scored significantly higher while the So-Eum type scored significantly lower in two studies<sup>27, 28</sup>, but the Tae-Eum type scored significantly higher in one study.<sup>27</sup> The So-Eum type scored significantly higher in Conscientiousness compared to the Tae-Eum type while the So-Yang type scored significantly higher in Openness<sup>28</sup> compared to both the Tae-Eum and So-Eum types.

### **9.3. TCI, TCI-RS, JTCI (Temperament and Character Inventory, Temperament and Character Inventory-Revised Short, Junior Temperament and Character Inventory)**

In the six studies<sup>26, 29-33</sup> that used the TCI, TCI-RS, or JTCI, the So-Yang type scored significantly higher in Novelty Seeking (NS) scale compared to the So-Eum type. On the other hand, the So-Eum type scored significantly higher in Harm Avoidance (HA) scale compared to the So-Yang type. In Reward Dependence (RD) scale, four studies<sup>30-33</sup> showed that the So-Yang type scored significantly higher compared to other types while three studies<sup>30-32</sup> showed that the So-Eum type scored significantly lower in Persistence (P) scale than other types. There were two studies<sup>32, 33</sup> that had significant differences in Self Directedness (SD) scale. The So-Yang type scored significantly higher compared to the So-Eum type.

### **9.4. STAI (State Trait Anxiety Inventory)**

One study<sup>34</sup> was used to assess emotion and mood in the STAI. It found that the So-Eum type scored significantly higher in both State Anxiety (STAI-S) and Trait Anxiety compared to other types.

### **9.5. MMPI (Minnesota Multiphasic Personality Inventory)**

One study<sup>35</sup> employed the MMPI. It showed that the So-Yang type scored significantly higher in Paranoia (Pa) while the So-Eum type scored significantly higher in Social introversion (Si).

## **9.6. PWI (Psychosocial Well-being Index)**

There were two studies<sup>24, 36</sup> that used the PWI.

Both two studies<sup>24, 36</sup> showed that the So-Eum type has a higher risk of psychosocial stress than other types.

## **9.7. SOS (Symptoms Of Stress)**

Two studies<sup>37, 38</sup> that employed the SOS found significant differences in the Sasang constitutions. The So-Eum type has a higher score in Depression, Anxiety, and total stress response than other types. One study<sup>37</sup> showed that the So-Yang type scored higher in Emotional irritability (Anger) while another study<sup>38</sup> showed that the Tae-Eum type scored higher than other types.

## **9.8. CST (Character Strength Test)**

In particular, there was one study<sup>39</sup> for Character strengths in the CST of the Sasang constitutions. It was found that the So-Yang type scored significantly higher in Creativity, Curiosity, Social intelligence, Bravery, Zest, Leadership, and Humor while the So-Eum type scored significantly higher in Humility and Prudence. Interestingly, the So-Yang type completely scored zero in Humility and Prudence whereas the So-Eum type completely scored zero in Bravery, Zest, and Leadership. In the CST, the Tae-Eum type demonstrated positioning in between the So-Yang and So-Eum types which is likewise common to other studies in psychological features.

Table 8 - Sasang constitutional type-specific psychological features

References	Inventory	Significant Outcome		
		So-Yang	Tae-Eum	So-Eum
Chae H <i>et al</i> (2003) <sup>25</sup>	MBTI	EI (101.6±24.0) JP (106.4±26.70)	EI (118.0±22.4) JP (107.1±28.6)	EI (133.9±16.4)** JP (88.4±24.1)*
Lee JH <i>et al</i> (2007) <sup>26</sup>	MBTI	EI (92.33±24.26) JP (104.83±32.21)	EI(116.80±28.50) JP (117.80±32.42)	EI(126.05±19.10)*** JP (84.91±28.00)**
Park HI <i>et al</i> (2000) <sup>27</sup>	NEO-PI-R	Ne (59.98±10.37) Ex (46.10±11.04) Co (43.86±10.26)	Ne (61.26±9.81) Ex (46.56±11.26) Co (41.63±11.51)	Ne (62.79±9.56)* Ex (37.90±11.08)* Co (45.76±10.31)*
Chang HC <i>et al</i> (2005) <sup>28</sup>	NEO-PI-R	Ex (143.54±2.92) Op (134.42±3.62)	Ex (129.97±3.31) Op (120.95±2.73)	Ex (126.05±2.33)** Op (120.84±2.37)*
Park SH <i>et al</i> (2011) <sup>29</sup>	TCI-RS	NS (31.90±9.87) HA (35.16±11.50)	NS (28.76±9.30) HA (39.20±11.26)	NS (25.24±9.21)* HA (44.64±8.47)*
Lee JH <i>et al</i> (2007) <sup>26</sup>	TCI	NS (25.58±3.61) HA (15.50±7.09)	NS (16.70±7.59) HA (18.10±8.91)	NS (17.09±6.17)*** HA (20.73±5.27)*
Kang MS <i>et al</i> (2015) <sup>30</sup>	TCI-RS	NS (40.03±8.09) HA (31.57±9.99) RD (47.93±8.23) P (44.17±9.07)	NS (37.80±12.32) HA (35.76±13.13) RD (47.78±8.98) P (44.24±9.42)	NS (32.55±11.09)* HA (44.23±11.76)* RD (40.52±8.08)* P (38.39±10.45)*
Sung WY <i>et al</i> (2012) <sup>31</sup>	TCI	NS (57.78±10.21) HA (46.38±7.71) RD (51.69±8.93) P (50.06±9.28)	NS (52.82±9.89) HA (48.84±12.52) RD (50.49±9.56) P (50.73±10.26)	NS (48.84±9.34)* HA (58.77±13.00)* RD (45.48±8.56)* P (42.29±9.27)*
Choi DS <i>et al</i> (2011) <sup>32</sup>	TCI	NS (40.74±8.04) HA (33.29±11.75) RD (50.09±7.72) P (45.97±10.66) SD (47.94±9.51)	NS (39.30±10.80) HA (38.91±10.27) RD (46.27±9.42) P (43.44±9.51) SD (43.35±10.34)	NS (31.67±6.12)** HA (47.13±10.31)** RD (43.63±8.77)* P (35.87±10.96)** SD (40.13±9.62)*
Sung WY <i>et al</i> (2011) <sup>33</sup>	JTCI	NS (54.05±10.72) HA (44.81±10.52) RD (52.46±10.45) SD (51.65±9.94)	NS (45.30±9.05) HA (51.20±10.19) RD (45.87±11.41) SD (45.83±8.94)	NS (42.91±8.55)* HA (57.00±8.12)* RD (50.41±7.53)* SD (43.59±9.65)*
Seo W <i>et al</i> (2000) <sup>34</sup>	STAI	STAI-S (39.00±8.53) STAI-T (39.09±6.01)	STAI-S (39.97±9.24) STAI-T (41.14±9.95)	STAI-S (46.82±10.82)* STAI-T (47.76±9.48)*



Anxiety; STAI-T: State Trait Anxiety Inventory-Trait Anxiety; Pa: Paranoia; Si: Social introversion; N.S.: Not Significant; SE: So-Eum; SY: So-Yang; TE: Tae-Eum; TY: Tae-Yang

## IV. DISCUSSION

Supporting the high expectations of improvement on the quality of life, the selected 39 articles were systematically reviewed to investigate the significant differences of the Sasang constitutions in terms of physical, mental, and social well-being. The physical well-being was further classified into four subcategories: urination, perspiration, defecation, and digestive function as each Sasang constitution is physically related to. Moreover, psychological features pertaining to Sasang Constitutional Medicine were included and analyzed for mental and social well-being.

It was reported that yellow-colored urine is frequently shown in decreasing order of the Tae-Eum, So-Eum, and So-Yang types<sup>1</sup>, and also the Tae-Eum type has a higher frequency with foamy urine.<sup>2</sup> The reason can be considered that the Tae-Eum type has a hyperactive liver which easily increases internal body heat<sup>48,56</sup>, so is more likely to suffer from hypertension, diabetes, and metabolic syndrome.<sup>58</sup> In the same way, it was also confirmed with one study<sup>5</sup> that the clearer urine color, the higher level of satisfaction on the quality of life improves mostly in the Tae-Eum type. Lastly, the So-Eum type's urination frequency is higher than other types<sup>2</sup>, which is due to good kidneys function of the type.<sup>41-45</sup> Urination is an indicator of overall health for the Tae-Yang type<sup>41, 55</sup>, who has a hypoactive liver that may lead to a pathological situation with urination,<sup>41,42,44,45,57</sup> but there was no group of the Tae-yang type, so it remains unfortunate that the tendency of the Tae-Yang type cannot be observed.

As sweating is an indicator of overall health for the Tae-Eum type<sup>41,55</sup>, nine<sup>1,2,4,6,7,9-12</sup> articles showed that the Tae-Eum type sweats excessively while the So-Eum type sweats less than others. Moreover, six articles<sup>1,2,4,7,11,12</sup> dealt with the feeling after sweating showed that the Tae-Eum type feels fresh after sweating while the So-Eum type feels fatigued or tired after sweating. Not only urination and defecation but also sweating is another way that the body secretes wastes and toxins.<sup>45</sup> The liver in Sasang Constitutional Medicine is responsible for accumulating energy and blood within the body, therefore the Tae-Eum type with a hyperactive liver tends to accumulate mass very easily and has a difficult time dispersing and metabolizing the accumulated mass and energy upwards and outwards.<sup>45</sup> This also enhances the accumulative tendency of the Tae-Eum type to generally have weak circulatory and respiratory systems.<sup>41,45</sup> Since the Tae-Eum type accumulates so much waste in the body with slow metabolism and excess eating<sup>1,4,16,52</sup> resulting from an imbalance between a hyperactive liver and hypoactive lungs, sweating is the foundation of health for the Tae-Eum type based on Sasang Constitutional Medicine.<sup>41-45</sup> On the other hands, the So-Eum type, who has a hypoactive spleen along with the weak digestive function that easily leads to have lack of blood due to insufficient food intake,<sup>2,17</sup> has less sweat.<sup>1,2,4,6,7,9,10-12</sup> Therefore, the So-Eum type feels fatigued or tired after sweating.<sup>1,2,4,7,11,12</sup> In addition, the So-Eum type experiences more cold sweat<sup>4,7,12</sup> due to poor stamina and lack of energy as well as being unable to hold the pore.<sup>41-45</sup>

Particularly, One article<sup>12</sup> reported that the So-Yang type feels hot overall and sweats especially at night when in poor condition.<sup>12</sup> It can be explained that the So-Yang type has hypoactive kidneys which also means the weakness of the water element, so it may

lead to Yin deficiency.<sup>41,42,45,48,55</sup>

Defecation is an indicator of overall health for the So-Yang type<sup>41,55</sup> who has an imbalance between a hyperactive spleen and hypoactive kidneys since the condition of stool that reflects the function of the kidneys can be used as a measure of the So-Yang type's health.<sup>41,45</sup> It was confirmed that the So-Yang type is more likely to complain of urgency than other types<sup>4,15</sup> and this result can be understood as high sensitivity to bowel movements because the function of the large intestine attached to the kidneys is weak as well.<sup>41</sup> Furthermore, the difference in health level according to the irregularity of bowel movement was reported to be the largest than other types<sup>15</sup> which is the result of demonstrating that the So-Yang type's health indicator is as having regular bowel movements.<sup>41,43,45</sup> Therefore, it is significant to have a bowel movement every day for the So- Yang type not only to reduce the stomach fever but also to examine the severity of the stomach fever by the state of the bowel movement.<sup>41,42,45,55</sup>

Four articles<sup>3, 4, 9, 10</sup> showed that the So-Eum type has lower bowel movements than other constitutions and has tender stool whereas the Tae-Eum type is the opposite.<sup>2, 4, 6, 13</sup>

This was confirmed that the large intestine which is attached to the kidneys<sup>41,55</sup> functions well for the So-Eum type<sup>41,42,45</sup>, who has hyperactive kidneys, so the sensitivity of bowel movements and discomfort is less without quick bowel movements.<sup>1,3,4,5,9,10</sup> In addition, due to the lack of energy and cold in the body as well as poor digestive function resulting from an imbalance between hyperactive kidneys and a hypoactive spleen<sup>41,42,45,55</sup>, the So-Eum type tends to have tender stool<sup>6</sup> and diarrhea in poor condition.<sup>4,50</sup> It is okay to defecate once every 2-3 days, but more frequent or longer diarrhea is more serious

pathological for the So-Eum type.<sup>41-43,50,55</sup> However, if the physical condition worsens or the habit of not having bowel movements frequently becomes pathologically severe, it is likely to lead to constipation.<sup>41-43,55</sup>

In the case of the Tae-Eum type, who has a hyperactive liver and hypoactive lungs, there is a condition in which liver fever accumulates due to the insufficient dispersing function of lungs and excessive intakes of the liver<sup>45</sup> resulting in hardened thick stool.<sup>2, 6, 13</sup>

Digestion is an indicator of overall health and the key to determining the prognosis in pathological situations for the So-Eum type<sup>41,52,55</sup>, who has an imbalance between hyperactive kidneys and a hypoactive spleen.<sup>41</sup> From the results, there were significant differences in distinguishing between the So-Eum and Tae-Eum types. It was found in all the three factors of digestion, appetite, and meal amount that the So-Eum type is identified to have a poor digestive function whereas the Tae-Eum type is on the opposite side.<sup>41,52</sup> Moreover, as three articles<sup>20-22</sup> showed, gastrointestinal disorders are much higher with the So-Eum type than others. Those results demonstrated that the congenital predisposition, which is a hypoactive spleen<sup>41,44,45,55</sup>, is deeply related to gastrointestinal disorders. The Tae-Eum type also has frequent prevalence to malfunction of the digestive system like gastritis<sup>21</sup> on a gastrointestinal endoscopy examination considering the eating habits like overeating and bigger meal amount<sup>1, 2, 4, 16</sup> due to good digestive function and a strong appetite.<sup>1,2,4,6,16,17,41</sup>

As Sasang Constitutional Medicine is defined as mind-body medicine<sup>41,55</sup>, meanwhile, there were research and analyses for the psychological and emotional aspects of each

Sasang constitution in mental and social well-being on the various psychological inventories, MBTI, NEO-PI-R, TCI, TCI-RS, JTCI, STAI, MMPI, PWI, SOS, and CST.

From the results, significantly contrasting differences between the So-Yang and So-Eum types were found. The So-Yang type scored significantly higher in Extroversion, Perceiving, Openness, Reward Dependence, Persistence, Self Directedness, and Paranoia causing from an imbalance between a hyperactive spleen and hypoactive kidneys which leads to excessive Yang and deficient Yin character<sup>41,42,48</sup>, on the contrast, the So-Eum type scored significantly higher in Introversion, Judging, Neuroticism, Conscientiousness, Harm Avoidance, Anxiety, Social introversion, Depression, and high risk of total stress response causing from an imbalance between hyperactive kidneys and a hypoactive spleen which leads to excessive Yin and deficient Yang character.<sup>41,42,48</sup>

In addition, a noteworthy fact is that there was one study<sup>39</sup> which was conducted using the Personality Strength Test (CST) that helps humans change and grow positively in relationships and social lives contrasting to the prevention methods based on disease models. It was found that the So-Yang type scored significantly higher in Creativity, Curiosity, Social intelligence, Bravery, Zest, Leadership, and Humor while the So-Eum type scored significantly higher in Humility and Prudence. Interestingly, the So-Yang type completely scored zero in Humility and Prudence, on contrast, the So-Eum type completely scored zero in Bravery, Zest, and Leadership.

Finally, the strengths and weaknesses along with constitutional type-specific features in

terms of physical, mental, and social well-being depending on the Sasang constitutions were indeed revealed. It was also found that the Tae-Eum type demonstrates positioning in between the So-Yang and So-Eum types in a majority of studies, hence it can be considered that the nature of the liver mostly influences the Tae-Eum type is positioned between Yin and Yang.

However, some limitations of this study should be acknowledged. First, this study could not make any decisive confirmation on the Tae-Yang type due to the insufficiency of clinical reports. Second, although this study provided remarkable clinical data, it was unclear whether precise data were obtained due to questionnaires that could be interpreted arbitrarily and the lack of representation to be generalized, which might be the result of sampling bias. Third, a meta-analysis could not be created as the data in this study were based on different forms of questionnaires and relatively self-reporting methods lacking reliability and validity. Therefore, it is necessary to analyze the characteristics in Sasang Constitutional Medicine with generalized and standardized values through the large scale of clinical research and meta-analysis.

When humans have a deeper understanding of themselves including their strengths, weaknesses, and preferences both physically and mentally, it can help be freed from work stress or relationships that do not fit their aptitude socially.<sup>24,37</sup> Consequently, it can provide help understand not only themselves but also others, and hence it can lead to build smooth relationships in society.<sup>41,45,55</sup> Besides, it can also help give them a strong sense of self-confidence by knowing who they are and what they stand for in their lives.

On overall results, diverse sources of evidence with significantly different characteristics of the Sasang constitutions in terms of the physical, mental, and social well-being were determined, therefore, Korean Sasang Constitutional Medicine can be utilized in predictive, preventive, and personalized medicine along with discovering oneself, and thus the quality of life can be improved.

Above all, it also would be expected that Korean Sasang Constitutional Medicine provides help patients in clinical practice discover not only themselves but also Creator, realize the reasons for existence with unique gifts and strengths, live according to the purpose of lives and consequently pursue healthy and beautiful lives.

## V. CONCLUSION

This study aimed to perform a systematic review to identify and appraise existing outcome measures for clinical use in predictive, preventive, and personalized medicine along with discovering oneself based on Korean Sasang Constitutional Medicine in terms of physical, mental, and social well-being supporting the high expectations of improvement on the quality of life. The conclusion of the study is as follows:

1. The Tae-Eum (Greater Yin) type is identified to have highly concentrated, yellow-colored, and foamy urine, excessive sweat as well as the fresh feeling after sweating, hardened thick stool, good digestion, and frequent prevalence to malfunction of the digestive system like gastritis. It is recommended to have a regular evaluation from a gastroenterologist and as sweating is an indicator of overall health and the key to secreting wastes and toxins for the Tae-Eum type, it is significant to have sufficient sweating to get a good balance between a hyperactive liver and hypoactive lungs for longevity and life preservation by strengthening the immune system in physical well-being.
2. The So-Yang (Lesser Yang) type is identified to have sweat at night when in poor condition, high sensitivity to defecation regarding irregularity of bowel movement, and fewer indigestion issues. As defecation is an indicator of overall health and the key to reducing stomach fever as well as examining the severity of stomach

- fever for the So-Yang type, it is significant to have a bowel movement every day to get a good balance between a hyperactive spleen and hypoactive kidneys for longevity and life preservation by strengthening the immune system in physical well-being.
3. The So-Eum (Lesser Yin) type is identified to have high urination frequency, less sweat as well as fatigue after sweating, low frequency of defecation along with tender stool, poor digestive function with low appetite, and high gastrointestinal disorders. As digestion is an indicator of overall health and the key to determining the prognosis in pathological situations for the So-Eum type, it is recommended to have a regular evaluation from a gastroenterologist and significant not to have excessive sweating and to have warm and easily digestible foods to get a good balance between hyperactive kidneys and a hypoactive spleen for longevity and life preservation by strengthening the immune system in physical well-being.
  4. As for mental and social well-being, the So-Yang type is identified to be positioned in diverse extroverted characteristics in a majority of studies for psychological features while the So-Eum type is the opposite and the Tae-Eum type is identified to be positioned in between the So-Yang and So-Eum types. Having a deeper understanding of themselves including their strengths, weaknesses, and preference as well as of others, it can help be freed from work stress or relationships that do not fit their aptitude socially and build smooth relationships in society, moreover, identify their unique gifts.

5. It remains unfortunate that the Tae-Yang (Greater Yang) type cannot be observed due to no group of the type as Je Ma Lee mentions in his book ‘Dong-Ui-Su-Se-Bo-Won (Longevity and Life Preservation in Eastern Medicine)’ that the Tae-Yang type is rare.
  
6. Since the diverse sources of evidence with significantly different characteristics of the Sasang constitutions are obviously consistent and clear, it has been found to support the theory of Korean Sasang Constitutional Medicine in ‘Dong-Ui-Su-Se-Bo-Won (Longevity and Life Preservation in Eastern Medicine)’ by Je Ma Lee.

In conclusion, Korean Sasang Constitutional Medicine is expected to contribute to predictive, preventive, and personalized medicine along with discovering oneself utilizing each constitutional type-specific feature in terms of physical, mental, and social well-being, and thus the quality of life can be improved.

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