

ABSTRACT

An Examination of Qi Through the Lens of Western Medicine

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The concepts of Traditional Chinese Medicine, and specifically the concept of Qi, are frequently difficult to reconcile with the biochemical systems approach of Western Medicine. However, an examination of the physical, chemical, and psychological mechanisms associated with treatments related to Qi reveals that an approach to medical treatment through Qi philosophy affects health in a physiologically recognizable manner, with Qi-based treatments acting on multiple biological systems at once. Though a physical manifestation of Qi cannot be demonstrated in scientific research, an understanding of Qi as a philosophical system that informs diagnosis and treatment of disease in Traditional Chinese Medicine increases the potential for integration of TCM medical knowledge into western medicine and encourages legitimization of the traditional Chinese medical perspective.

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AN EXAMINATION OF QI THROUGH THE LENS OF WESTERN MEDICINE

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PREFACE

In a diverse and increasingly connected world, it is becoming more and more necessary to understand the perspectives of those who have a different cultural background than we. This is especially important in the field of medicine where beliefs and systems of healing have an innately personal impact on patients. In addition, as the medical field continuously searches for a better knowledge of the human body and disease, it is important to learn from medical practitioners around the world who can add to our knowledge base as we to theirs; in this way we can improve healthcare worldwide.

Western medicine has been historically resistant to Traditional Chinese Medicine (TCM) treatments and cautious to implement TCM knowledge due to significant differences in philosophy. Most notably the concept of “Qi” has been a stumbling block to western understanding of TCM treatments¹, as it as a concept or biological system is wholly unpresent in western medical theory.

This paper seeks to argue that Qi can in fact be understood within western medical theory. By approaching Qi as a multi-faceted and overarching concept of health, Qi-based TCM treatments can be characterized within western systems and thereby applied safely and effectively alongside traditionally western medical treatments. In addition, increased understanding of the philosophy behind Qi can make clear the aspects that make TCM effective as a system starkly different from that in the West.

¹ Jing Sun et al., “To Unveil the Molecular Mechanisms of Qi and Blood through Systems Biology-Based Investigation into Si-Jun-Zi-Tang and Si-Wu-Tang Formulae,” *Scientific Reports* 6, no. 1 (September 2016): 34328.

CHAPTER 1

Physical Manifestations of Qi

Defining Qi

Central to an understanding of Qi-based medicine is an awareness of the physical and physiological properties of Qi. The American Heritage Dictionary of Medicine describes Qi as “the vital force believed in Taoism and other Chinese thought to be inherent in all things”. A substance that is woven into the fabric of the universe, it connects all things and is present in all things, living and nonliving². It is significant to note that Qi has no parallels to specific forces in empirical science in the western sense; it is not synonymous with energy or a physical force³. Yet in property and in action it could be considered simultaneously energy and matter; it fills the living thing and animates it, acts as a force and is able to be manipulated⁴. This type of duality is found in western science in the understanding of light, which is said to behave both as a particle and as wave, fitting neither into the category of matter, nor energy. In its impact on the individual, however, Qi acts much more comprehensively and potently in regard to health than does light.

² KAIBARA EKKEN and Mary Evelyn Tucker, “INTRODUCTION,” in *The Philosophy of Qi*, The Record of Great Doubts (Columbia University Press, 2007), 1–76, accessed September 9, 2020.

³ BillMoyers.com, *Healing and the Mind: The Mystery of Chi*, 2011, accessed October 20, 2020.

⁴ EKKEN and Tucker, “INTRODUCTION.”

Another very important property of Qi is its fluidity. Qi is described as “flood like” and moves like rivers or streams on an inclined surface, flowing in streams within individuals and between individuals and other beings or elements of the universe⁵. Like water, which freezes and melts, Qi is said to be in constant dynamic movement, fusing and diffusing, integrating, and disintegrating. A healthy state is therefore dynamic, constantly changing and evolving and switching between balanced states, yin and yang. While western medicine has anatomical maps of blood vessels and neural pathways, Traditional Chinese Medicine (TCM) includes an anatomical map of meridians, or circuits of energy through the human body which do not correspond with the circulatory or nervous systems⁶. Qi is supposed to flow along these meridians in a healthy individual, becoming trapped, blocked, or interrupted in different disease states.

Acupuncture, Qi Sensation, and Connections to Neurology

The 12 meridians over which Qi is supposed to flow have been the subject of numerous studies. Their most common usage is in the art of acupuncture, which involves stimulation of carefully chosen points on the body via the use of needles, sometimes connected to electrical current. According to TCM, the stimulation of acupuncture points along the meridians allows the clinician to connect to and diagnose the state of the patient’s Qi, determining whether it is strong, i.e., healthy, or weak. The clinician can then use the stimulation of these points to restore the flow of Qi and blood and to activate “antipathogenic Qi” to areas of the body that are lacking⁷. The most important factor in

⁵ Ibid.

⁶ BillMoyers.com, *Healing and the Mind*.

⁷ Xing-Yue Yang et al., “Characterization of Deqi Sensation and Acupuncture Effect,” *Evidence-based Complementary and Alternative Medicine : eCAM* 2013 (2013), accessed September 9, 2020.

acupuncture efficacy is traditionally “deqi sensations”, that is, physical, subjective feelings that accompany needle stimulation and are said to characterize the “arrival of vital energy”⁸. A characteristic physical sign is “propagated sensation along meridians”, which is said to represent the flow of Qi. This can appear as skin reddening, goosebumps, or “localized red or white lines along the meridians of the body surface” and is the region in which deqi sensations described as “aching”, “soreness”, “numbness”, “tingling”, “fullness”, “pressure” and “heaviness” occur⁹. One study reported that sensations characterized as “tingling” were more common with electrode stimulation, while “aching” was more characteristic of manual stimulation; the deqi sensations were also more pronounced in the usage of electrical needle stimulation compared to manual¹⁰. Pain is also occasionally experienced during acupuncture, but sharp pain is generally regarded as “inadvertent noxious stimulation” and is counterproductive¹¹. One study suggested that pain sensations are more common when the needle penetrates the epidermis, whereas deqi sensations are experienced upon deeper stimulation¹². At the same time the patient is experiencing these deqi sensations, the acupuncturist feels sensations of “tenseness”, “tightness” or “fullness” through the needle, which are their

⁸ Jinbo Sun et al., “What Is the De-Qi-Related Pattern of BOLD Responses? A Review of Acupuncture Studies in fMRI,” *Evidence-based complementary and alternative medicine* 2013 (2013): 297839–297839.

⁹ Yang et al., “Characterization of Deqi Sensation and Acupuncture Effect.”

¹⁰ Albert Y. Leung et al., “The Electrophysiology of De Qi Sensations,” *The Journal of Alternative and Complementary Medicine* 12, no. 8 (October 1, 2006): 743–750.

¹¹ Yang et al., “Characterization of Deqi Sensation and Acupuncture Effect.”

¹² Ibid.

signal to focus on holding on to the Qi. Both patient and acupuncturist deqi sensations tend to happen at the same time¹³.

Interestingly, the points of acupuncture stimulation are important. In western medicine, research has been conducted to identify “myofascial trigger points (MTrP’s)”, where patients report referred pain or exhibit reflexive recoil from touch (“jump signs”) when pressure is applied. A 2008 report showed that 95% or more of these identified MTrP’s correlate with the location of acupoints¹⁴. Stimulation at these points has been shown to decrease pain more significantly than at places not designated as acupoints or MTrP’s. Why is this? One theory is that these regions are areas dense with somatosensory nerves. The sensations of pain experienced when hypotonic saline injections are given intramuscularly are similar to deqi sensations; they are described as “dull, diffuse, and difficult to localize”¹⁵.

This implies that these sensations are related to the activation of nociceptors in muscle. Research has also reported that the surface of the skin is not uniform in resistance and conductivity, with increased conductivity at acupoints¹⁶. When isotopes were injected at these points, they traveled along electrical pathways consistent with meridian lines. Given that neurons conduct electrical signals as their method of information relay, it is reasonable to deduce that there is increased electrical activity where neurons are densely populated. Acupoints typically line up with the hypersensitive nerve endings of cranial

¹³ Ibid.

¹⁴ Bai-Yun Zeng, Fanrong Liang, and Kaicun Zhao, *Neurobiology of Acupuncture*, First edition., International review of neurobiology ; volume 111 (Amsterdam ; Elsevier/AP, 2013).

¹⁵ Sun et al., “What Is the De-Qi-Related Pattern of BOLD Responses?”

¹⁶ Big Leung, *Traditional Chinese Medicines: The Human Dimension* (London ; Routledge, 2008).

and spinal nerves¹⁷. The fact that some areas of the body are more densely innervated than others supports the lack of uniformity in superficial electrical characterization, and it is reasonable to assume that deqi sensations are the activation of the receptors at the ends of these neural pathways. Thus, TCM meridians describe regions of greater electrical conductivity, connecting acupoints which are in effect neural-conductive hot spots. This theory of electrical conductivity also provides explanation for the sensations experienced by those performing acupuncture. Electrical signals are traveling through the tissue as a conductive substance, and needles can conduct these currents as well. Just as a current traveling through an acupuncture needle can cause contraction of localized muscles in the patient, the currents flowing through needles from acupuncture points may cause contraction of muscles in the acupuncturist's hand¹⁸, which is experienced as a deqi sensation.

The difference in types of deqi sensations may be the result of the activation of different types of neural receptors in the muscle layer. For instance, research that shows the stimulation of nerves give sensations of numbness, while stimulation of muscle fibers results in soreness or distension, and stimulation of blood vessels results in pain¹⁹. Each of these is a characteristic deqi sensation. Each type of neural receptor would then transmit a different deqi sensation to the central nervous system, following a distinct neural pathway. This is supported by evidence that each of these sensations is conveyed by a different nerve-fiber system: numbness by fast conducting AB fibers, soreness by

¹⁷ Ibid.

¹⁸ Yang et al., "Characterization of Deqi Sensation and Acupuncture Effect."

¹⁹ Ibid.

A δ and C fibers, and pain by slow conducting A δ and C fibers²⁰. fMRI studies using blood oxygenation level-dependent responses have indicated that there are different brain processing pathways for superficial sharp pain and deep pain, and that the same brain regions activated during deep pain are activated during deqi, with the exception of the anterior and posterior cingulate, which were among the inactivated regions noted during deqi sensation²¹. Similarly, PET scans during reported deqi stimulation showed increased blood flow to the hypothalamus, insula, and midbrain, and this result was not present when deqi sensations were not present²².

Since pain is one of the most common symptoms treated by acupuncture, the difference between pain causing stimulation and acupuncture stimulation for the purpose of neurological physical analgesia is important²³. Studies would report, in fact, that there is no evidence of therapeutic effect with deqi sensation other than pain relief²⁴; thus, the effectivity of acupuncture must be linked to analgesia. Correlation has been found between deqi sensations and analgesic effects, but there is much contradictory research²⁵. It is uncertain whether it is the deqi sensation or the stimulation of neuroreceptors that is important to the relief of pain. Japanese acupuncture, for example, avoids the needling sensations described in the deqi central to TCM acupuncture²⁶. Regardless,

²⁰ Ibid.

²¹ Sun et al., "What Is the De-Qi-Related Pattern of BOLD Responses?"

²² Yang et al., "Characterization of Deqi Sensation and Acupuncture Effect."

²³ Leung, *Traditional Chinese Medicines*.

²⁴ Zeng, Liang, and Zhao, *Neurobiology of Acupuncture*.

²⁵ Sun et al., "What Is the De-Qi-Related Pattern of BOLD Responses?"

²⁶ Yang et al., "Characterization of Deqi Sensation and Acupuncture Effect."

physiologically speaking the numbness caused by stimulation of nerves associated with pain signals may correlate with analgesic effects. Interrupting a pain signal with a conductive material such as a needle may prevent the communication and therefore sensation of pain.

Studies on chronic pain have revealed linkages with a so called “pain matrix” of the brain which includes the prefrontal cortex. Chronic pain is associated with excessive activity in the prefrontal cortex, as is sharp pain, while treatment for pain results in reduced activity in the prefrontal cortex²⁷. If chronic pain is an overstimulation of pain related neural pathways, then interruption of these signals via acupuncture provides a relief by removing the signal. Similarly, studies have shown the efficacy of the use of acupuncture to treat nausea and vomiting, which is activated by the autonomic nervous system, and it has been suggested that acupuncture manipulation can induce autonomic changes²⁸.

Healing Mechanisms of Manual Qi Manipulation

Though the mechanism is not fully known, this connection between physical stimulation and autonomic changes is evidenced in studies on massage, particularly the massage techniques of TCM. Part of the medical philosophy of Qi is its necessity for flow, both through meridian channels and through the various tissues and organs. Qi is given different nomenclature based on where it is and how it behaves; for instance, the body contains Qi that it has had since birth as inherited from parents, and this is called “primordial qi”, which is differentiated from acquired qi. Acquired Qi comes from intake,

²⁷ Zeng, Liang, and Zhao, *Neurobiology of Acupuncture*.

²⁸ Ibid.

either in the form of air, food, or drink. Qi can also be labeled according to the organ it belongs to, as in “liver Qi”, or its purpose²⁹. These labels allow for specificity in description, as not all Qi in the body is affected simultaneously or as a whole; different treatments, illnesses, or lifestyle changes might affect a certain type of qi. The categories of Qi based on purpose are important to this discussion because of their physical location and behavior according to TCM. “Nutritive Qi”, whose purpose is to sustain the body, is what circulates in the meridians. Nutritive Qi is also said to be found in “deep organs” and can enter the circulatory system via transformation into blood. “Defensive Qi” is the other type, and acts as protection for the body. This type of Qi does not stick to meridians, but travels freely, especially in the superficial organs of the skin and muscles³⁰. Thus, when massage is considered as a treatment of Qi, its purpose is to stimulate the flow of these Qi forms in various places of the body³¹. This philosophy of treatment is demonstrated in the TCM massage program developed for a group of young children with disorders causing developmental delay in motor skills. The protocol involved a series of distinct steps, with each focusing on a different functional area of the body. The first steps involved opening channels for Qi to flow to the brain and skin of the back, with the intention of improving the senses. The next focused on circulation of the arms and hands, social interaction, speech and self-soothing, the next on the digestive system and legs, as well as overall strength. The final step reemphasized some of these

²⁹ Wei-bo Zhang et al., “Understanding Qi Running in the Meridians as Interstitial Fluid Flowing via Interstitial Space of Low Hydraulic Resistance,” *Chinese journal of integrative medicine* 24, no. 4 (2018): 304–307.

³⁰ Ibid.

³¹ Hong Zhang et al., “Effects of Intermittent Pressure Imitating Rolling Manipulation on Calcium Ion Homeostasis in Human Skeletal Muscle Cells,” *BMC complementary and alternative medicine* 16, no. 1 (2016): 314–314.

focus areas with massage directed towards sleep and calmness and brain circulation³². Clear in this massage program is the focus on problem areas through targeted physical stimulation of Qi in specific places.

Though there is not research evidence to suggest a connection between specific body parts and organ systems, as in the leg and the digestive system³³, links between superficial tissue massage and overall body reactions have been proposed as occurring through biochemical pathways. One study used Yi Zhi Chan Tuina manipulation, a Chinese massage technique, to examine the impact of physical pressure on the body. The study varied the length of manipulation and the amount of force applied and found that after applying pressure to acupoints using this technique, blood vessel diameter was increased the most using a moderate amount of force and was positively linked to length of manipulation session up to ten minutes³⁴. The mechanism by which this was proposed to have occurred relates to physical stimulation of biochemical pathways in the cells of blood vessel walls. This physical activation of biochemical reactions in cells has been documented elsewhere in reports of “tissue winding”, a negative effect associated with needle rotation during acupuncture³⁵. Cell contraction, changes in gene expression, and extracellular matrix modification were all reported as resulting from tissue winding, so it

³² R. Song et al., “The Impact of Tai Chi and Qigong Mind-Body Exercises on Motor and Non-Motor Function and Quality of Life in Parkinson’s Disease: A Systematic Review and Meta-Analysis,” *Parkinsonism & related disorders* 41 (2017): 3–13.

³³ BillMoyers.com, *Healing and the Mind*.

³⁴ Fang Lei Fang Min Jiang Shichao Chen Hua, “Optimization of Parameters of Yi Zhi Chan Tuina Manipulation Promotes Peripheral Circulation,” *Journal of traditional Chinese medicine* 35, no. 5 (2015): 558–563.

³⁵ Zhang et al., “Understanding Qi Running in the Meridians as Interstitial Fluid Flowing via Interstitial Space of Low Hydraulic Resistance.”

is reasonable to infer a possible impact of localized pressure on the endothelial and smooth muscle cells of the circulatory system. This pressure may exact its biochemical effects through activation of calcium channels in the cells. Influx of calcium may then activate protein kinases that activate synthetases of nitric oxide, increasing cyclic adenosine monophosphate (cAMP), opening potassium channels and closing Ca channels. Physical stimulation may also activate the production and release of calcitonin gene related peptide (CGRP), which, found in the brain and spinal dorsal horn, is linked to signaling pathways that impact cardiac contractility and stroke volume along with vasodilation (Fang Lei Fang Min Jiang Shichao Chen Hua). This type of mechanism involves neural path stimulation or chemical signals in the bloodstream to carry out diverse processes at distant locations in the body.

Another study found that the rolling manipulation technique of Tuina massage helped induce healing of muscle cell injuries through calcium channel activation. Increased levels of calcium were found in injured muscle according to studies using biomarkers³⁶, so physical manipulation that released calcium into the intracellular space would relieve this biochemical stress. Superoxide dismutase (SOD), an enzyme which protects against the damaging effects of lipid peroxidation, appears to be decreased in injured muscle. When rolling manipulation was applied, SOD activity increased, but this increase could be stifled if an antagonist was used to block calcium channels³⁷. This suggests that calcium is necessary to cell healing processes; so mechanical activation of these channels is the mechanism through which massage manipulation leads to decreases

³⁶ Zhang et al., "Effects of Intermittent Pressure Imitating Rolling Manipulation on Calcium Ion Homeostasis in Human Skeletal Muscle Cells."

³⁷ Ibid.

in muscle pain and spasm. Interestingly, the manner of massage seems to be important to mechanical stimulation of ion channels, as static pressure did not activate SOD as rolling pressure did³⁸.

Connecting both of these calcium-dependent effects is the study on young children with motor skill deficiencies mentioned earlier, which proposed that motor improvement was the result of improved circulation to the muscles³⁹. Chinese medicine considers impairment of sensory nerves to be connected to poor blood flow in the skin, where sensory receptors are accumulated. By improving circulation with massage, then, sensory nerve and muscular function could be improved⁴⁰. The study found that after five months of a massage protocol carried out by parents with the help of trainers experienced in the concepts of Qi, there were significant improvements in motor skills as shown in motor scale and object manipulation scores. A check-in with participants five months after the study ended showed continuous improvement, emphasizing the lasting impact of these massage techniques⁴¹.

TCM massage techniques, though focused on blood flow, are not focused on the circulatory system independently. Because of the connection between blood and Qi, massage is specific to meridians and acupoints, and the impacts are said to be on qi flow as well as blood flow. Thus, change in blood flow is just one aspect, and does not fully encompass the concept of massage as Qi treatment. Qi is complex, and our understanding

³⁸ Ibid.

³⁹ Song et al., “The Impact of Tai Chi and Qigong Mind-Body Exercises on Motor and Non-Motor Function and Quality of Life in Parkinson’s Disease.”

⁴⁰ Ibid.

⁴¹ Ibid.

of it must be multifaceted. In an attempt to provide another context for the flow of Qi, it has been proposed that Qi meridians represent channels of movement of the interstitial fluid⁴². One third of bodily fluid is outside of the cells, with three-fourths of that making up the interstitial fluid, which includes the lymphatic system, and cerebral spinal fluid. Interstitial fluid allows communication between cells and carries nutrients and metabolic waste to and from the cells⁴³. For this reason, it is in motion, though it does not move in most places due to hydraulic resistance. The places where interstitial fluid can move are those areas of low hydraulic resistance, which happen to be located along meridian lines⁴⁴. The description of nutritive Qi, which flows in meridians, parallels the functions of mobile interstitial fluid. In the same way that nutritive Qi is said to circulate in meridians and nourish the body, interstitial fluid in areas of low hydraulic resistance carries nutrients, water, and chemical signals, among which pain signals might be included. A study of interstitial fluid in pigs showed that blocking channels where interstitial fluid flows leads to a lower pain threshold⁴⁵, suggesting that an accumulation of chemicals or pain signals, unable to be flushed out by the lymphatic system, could contribute to pain. In addition, acupoints, which are located along meridians, are “located in the depressions on the sides or between muscles, tendons and bones” and correspond to locations of interstitial space⁴⁶. Thus, stimulation at these points could promote

⁴² Zhang et al., “Understanding Qi Running in the Meridians as Interstitial Fluid Flowing via Interstitial Space of Low Hydraulic Resistance.”

⁴³ Ibid.

⁴⁴ Ibid.

⁴⁵ Ibid.

⁴⁶ Ibid.

interstitial flow and contribute to the effects associated with Qi. In this way, Qi as a biological substance can be characterized by the functions, interactions, and pathologies of the nervous, circulatory, musculoskeletal, and integumentary systems. In treating Qi, TCM methods address issues and mechanisms in these systems simultaneously. Rather than breaking each down and treating them individually and understanding of Qi allows them to be integrated.

Qigong and Tai Chi

The final treatment group that falls into this category of physiology is that which involves Qi based movement exercises. Though there are many variations, those commonly studied for health benefit are Qigong and Tai Chi. As a form of exercise, both of these are considered “meditative movement”, as they involve a coordination of “body, breath, and mind”⁴⁷. This integration is what leads to the conclusion of added benefits compared to non-meditative exercise. Within TCM, Tai Chi and Qigong affect the balance of Qi in the body by promoting healing and function⁴⁸. Qigong tends to be simpler and more repetitive than Tai chi, which tends to involve more complex choreography, but both focus on self-awareness, posture, movement, breath, and mindfulness⁴⁹. Qigong can be translated as “breathing techniques” or “vital energy skill” and is an older martial art that has historical roots in medicine⁵⁰. It is commonly used as a diagnostic tool as well as

⁴⁷ Roger Jahnke et al., “A Comprehensive Review of Health Benefits of Qigong and Tai Chi,” *American Journal of Health Promotion* 24, no. 6 (2010): e1–e25.

⁴⁸ Ibid.

⁴⁹ Ibid.

⁵⁰ Pedro Jesús Jiménez-Martín and Haoqing Liu, “Exploring the Health Advantages and Disadvantages of Static and Dynamic Postures of Qigong and Its Use as a Traditional and Complementary Medicine,” *European journal of integrative medicine* 24 (2018): 61–64.

a health promoting discipline. One form, spontaneous Qigong, involves entering a meditative state which allows focus on the circulation of Qi. In treatment of disease, the theory is that qi blockages can be addressed while in a “qigong state”. During this state, the person is in tune to the state of his or her Qi, and the body automatically sends Qi to a specific part of the body, which manifests in movements⁵¹. Those who have been guided with an expert practitioner and have reached this Qigong state report a “feeling of qi” similar to dopamine release⁵². However, spontaneous Qigong has been banned in some areas or discouraged due to association with negative effects such as falls, mental delirium or confusion, or involuntary movement⁵³. This calls into question the safety of this technique as a health form and requires more research. Nonspontaneous Qigong is the predominant form, and can be static or dynamic, with static involving more still mediation and internal movement than the bodily-movement-based dynamic forms⁵⁴. Studies of these two forms show that they have greater benefits for different demographics. Healthy people benefit more from dynamic Qigong, as exercise in general has been proven to improve health via cardiovascular and musculoskeletal effects, improving heart rate and joint mobility and flexibility⁵⁵. It has also been shown to be

⁵¹ “Spontaneous Qigong or Zifagong (自发功),” *Don Tow’s Website*, August 30, 2009, accessed October 29, 2020.

⁵² *Ibid.*

⁵³ Pedro Jesús Jiménez-Martín, Haoqing Liu, and Agustín Melendez-Ortega, “How to Study the Relationship between Tai Chi Chuan, Qigong and Medicine – A Review of Research Frameworks,” *European Journal of Integrative Medicine* 8, no. 6, Methodological Challenges in Whole Systems Research (December 1, 2016): 888–893.

⁵⁴ Jiménez-Martín and Liu, “Exploring the Health Advantages and Disadvantages of Static and Dynamic Postures of Qigong and Its Use as a Traditional and Complementary Medicine.”

⁵⁵ *Ibid.*

most beneficial for people with cardiac pathologies and anxiety disorders, as a state of focused “rest in movement” can be obtained that activates the body even as it maintains a slow and steady heart rate⁵⁶. Among those who cannot complete dynamic exercises, static qigong provides modified forms that meet the needs of the body, similar to the levels of exercise offered by physical therapy treatment plans. Since sitting and kneeling cause joint hyperflexion and limit circulation, standing Qigong was the preferred static form, providing opportunity for the exercise of balance and activation of muscle groups without the limitations of the other forms. In TCM, this preference might be explained as a way to prevent joints from becoming “blocked”, or as a safeguard for achieving a “calm mind”, since more difficult or painful positions make it more difficult to relax and meditate⁵⁷.

Tai Chi, on the other hand, was historically related to physical fitness and combat, coming to be related to TCM in 1949 when athletic principles were incorporated into the understanding of health⁵⁸. Its use is more related to physicality and use of force than the manipulation of energy for therapeutic purposes, though its impact as a technique on health is still prominent⁵⁹. A systematic review of studies found that the practice of tai chi could “alleviate the pain level and improve functional disability”⁶⁰. The combination of mental focus and mediation with aerobic, low energy requiring activity

⁵⁶ Ibid.

⁵⁷ Ibid.

⁵⁸ Jiménez-Martín, Liu, and Melendez-Ortega, “How to Study the Relationship between Tai Chi Chuan, Qigong and Medicine – A Review of Research Frameworks.”

⁵⁹ Ibid.

⁶⁰ Jiménez-Martín and Liu, “Exploring the Health Advantages and Disadvantages of Static and Dynamic Postures of Qigong and Its Use as a Traditional and Complementary Medicine.”

seem to benefit the health of practitioners, both through physical exercise and cognitive appraisal. A study of Tai Chi in patients with knee osteoarthritis found that it was at least as effective as physical therapy in reducing knee pain⁶¹, and especially in patients with pulmonary diseases and disorders, in whom exercise is much more difficult due to breathlessness, Tai Chi offers a way to strengthen the body and improve flexibility without compromising the need for slow and steady breathing⁶².

Many studies which consider both forms of martial arts together report various health benefits resulting from the practice of Tai Chi and Qigong. A study of these martial arts and Parkinson's disease proposed that they have the potential to address both motor skills such as balance and flexibility and the neurological symptoms, as exercise has been supported as a mode of improving these in other studies⁶³. For instance, patients with muscular dystrophy showed significant improvement in balance after practicing qigong, as did sedentary women and elderly healthy adults, and many studies show the efficacy of Tai chi in preventing falls⁶⁴. This might be explained by the idea that postures which involve fully body movement help with gait and balance, while the mental multitasking and focus benefit neuromuscular coordination⁶⁵. Tai Chi and Qigong seem

⁶¹ Brian S. Alper, Meghan Malone-Moses, and Eric W. Manheimer, "Point-of-Care Application of: 'Comparative Effectiveness of Tai Chi versus Physical Therapy for Knee Osteoarthritis—A Randomized Trial,'" *European journal of integrative medicine* 8, no. 6 (2016): 896–897.

⁶² L. Susan Wieland and Nancy Santesso, "A Summary of a Cochrane Review: Tai Chi for Chronic Obstructive Pulmonary Disease (COPD)," *European Journal of Integrative Medicine* 8, no. 6, Methodological Challenges in Whole Systems Research (December 1, 2016): 894–895.

⁶³ Louisa M. T. Silva et al., "Qigong Massage for Motor Skills in Young Children With Cerebral Palsy and Down Syndrome," *American Journal of Occupational Therapy* 66, no. 3 (May 1, 2012): 348–355.

⁶⁴ Jahnke et al., "A Comprehensive Review of Health Benefits of Qigong and Tai Chi."

⁶⁵ Silva et al., "Qigong Massage for Motor Skills in Young Children With Cerebral Palsy and Down Syndrome."

to improve general physical abilities such as ability to rise from a chair, walking, strength, and flexibility when compared to stretching, psychosocial support, education, or normal activity⁶⁶. The exercise forms have also been shown to improve bone density, decreasing bone loss and fractures even though the exercises involved little weight bearing or resistance⁶⁷. Antibody levels following a flu vaccine were shown to be higher in groups who practiced qigong for one month compared to those who received usual care, and tai chi practitioners were consistently shown to have improved immune function as indicated by cytokine and T-lymphocyte measures⁶⁸. In terms of cardiopulmonary effects, tai chi and qigong were found to reduce blood pressure, balance sympathetic and parasympathetic activity, and increase distance in a walk test, in line with other moderate intensity level exercise⁶⁹. Thus, Qi based exercise forms, though they do not have this as their main goal, can provide an ideal movement set that is accessible to people of various mobilities. The pairing of meditative breathing and focus with movement allows for relaxation and fluid movements, improving physical ability in a number of ways when normal exercise methods would be limited.

Qi as the Connector

The ways in which TCM affect physical health are integrated and complex. It is clear that no Qi-based treatment affects an isolated system of the body, but instead affects many physiological mechanisms simultaneously. The ways in which these systems as

⁶⁶ Jahnke et al., “A Comprehensive Review of Health Benefits of Qigong and Tai Chi.”

⁶⁷ Ibid.

⁶⁸ Ibid.

⁶⁹ Ibid.

understood by western medicine interact are not completely understood, but current research lies the groundwork for a perspective of how they might. The understanding of Qi underscores each of these treatment modalities and brings them together in a philosophy of health and disease which is unified. While western medicine focuses on each individual cause of disease as a differing culprit, TCM considers each as impacting a vital force. Whether there is a physically differentiable substance that can be identified as Qi or not, the unified understanding remains as a way of explaining the relationship of symptoms to effective treatment methods, the techniques of which have been honed over centuries in TCM. Musculoskeletal, lymphatic and cardiopulmonary, neurological, and integumentary systems are all connected to each other, as are their interactions with processes on the cell level, and though we can pull them apart to understand pieces of the physiological process, they are all connected, much like the flow of Qi which unites and impacts each and every part of the body in Chinese medical thought.

CHAPTER 2

TCM Disease Theory and Qi-Related Illness

Qi and TCM Disease Theory

The *Yellow Emperor's Inner Canon*, written during the Han Dynasty, is a collection of works from which the philosophic, integrated understanding of health and the body as it related to the universe influenced Chinese physicians⁷⁰. Within these and later works, health is closely associated with Qi. The health and presence of Qi is essential for proper function of the human body and overall wellness of the person, from energy metabolism to organ system function, homeostasis to growth⁷¹. The utilization of resources and metabolic processes that characterize living things are described in TCM with the all-encompassing term “Qi”; Qi is anything that is life sustaining⁷². Death comes when there is no more Qi, and aging is characterized by a depletion of Qi⁷³. Life sustaining substances and processes are further categorized as Primordial Qi, that is, a life sustaining force inherited from parents which stimulates growth and development, Pectoral Qi, which is gleaned from air, food, and water, Normal Qi, which is formed from

⁷⁰ Xu Wu et al., “Seeing the Unseen of Chinese Herbal Medicine Processing (Paozhi): Advances in New Perspectives,” *Chinese medicine* 13, no. 1 (2018): 4–4.

⁷¹ Sun et al., “To Unveil the Molecular Mechanisms of Qi and Blood through Systems Biology-Based Investigation into Si-Jun-Zi-Tang and Si-Wu-Tang Formulae.”

⁷² Wei Yao Hongwei Yang Guanghong Ding, “Mechanisms of Qi-Blood Circulation and Qi Deficiency Syndrome in View of Blood and Interstitial Fluid Circulation,” *Journal of traditional Chinese medicine* 33, no. 4 (2013): 538–544.

⁷³ Pou Kuan Leong et al., “Yang/Qi Invigoration: An Herbal Therapy for Chronic Fatigue Syndrome with Yang Deficiency?,” *Evidence-Based Complementary and Alternative Medicine* 2015 (2015): 1–8.

Primordial Qi and Pectoral Qi and circulates in the body, providing defense for the body (defensive Qi) and sustaining physiological processes (nutritive qi)⁷⁴. Functionally, Primordial Qi can be connected to the pumping of blood through the heart in western medicine, or to genetics and growth factors; nutritive qi can be related to metabolism and energy usage, and defensive qi can be linked to the immune system⁷⁵.

Another major philosophical aspect of TCM is the connection between Qi and blood. Blood in TCM is defined in the same way as western medicine, for the most part, but the interactive circulation of blood and Qi is very important to TCM theory⁷⁶. In TCM, Qi promotes blood formation and circulation⁷⁷; blood in turn nourishes qi, and in some places blood is synonymous with Nutritive Qi⁷⁸. As the bloodstream carries nutrients, cellular waste, oxygen and carbon dioxide, the analogy of blood carrying nutritive energy makes logical sense. In Hooper's *Vade Mecum in Chinese*, the treatment of various diseases is based on "combining matter in the blood"⁷⁹. Ingesting herbal medicines was believed to allow the medicine to interact with disease causing agents in the blood and bolster the natural metabolic processes through nutrition⁸⁰. This theory is not so far off from accepted western understanding of ingested medicine.

⁷⁴ Ibid.

⁷⁵ Ibid.

⁷⁶ Wei Yao Hongwei Yang Guanghong Ding, "Mechanisms of Qi-Blood Circulation and Qi Deficiency Syndrome in View of Blood and Interstitial Fluid Circulation."

⁷⁷ Sun et al., "To Unveil the Molecular Mechanisms of Qi and Blood through Systems Biology-Based Investigation into Si-Jun-Zi-Tang and Si-Wu-Tang Formulae."

⁷⁸ Wu et al., "Seeing the Unseen of Chinese Herbal Medicine Processing (Paozhi)."

⁷⁹ Ibid.

⁸⁰ Ibid.

To relate the concept of blood to Qi, Shigehisa Kuriyama, citing the thoughts of Nathan Sivin, states, “In Chinese medicine, blood and Qi were essentially the same. Doctors did, to be sure, spotlight the distinctions. Blood had form, for instance, while Qi was formless; the former constructive, making up the substance of the body, the latter was protective, warding off alien pathogens...Ultimately, blood and Qi were complementary facets of a unique vitality, its yin and yang manifestations”⁸¹. From this the interconnectedness of Qi and blood is evident. When Greek derived medical systems of temperaments were brought to East Asia, the blood element, normally associated metaphorically with fire, was instead associated with Qi⁸². Qi defined as “vigorous” or “energetic” strengthens this understanding of the blood as a major factor of life force, but also parallels the Greek philosophy. This may be connected to how blood is the transport system for life giving and life sustaining compounds, including various nutrients, signaling hormones, and oxygen.

Coupled with this understanding of life force is the balance between Yin and Yang, opposing forces that interact to generate Qi. In Yin/Yang philosophical theory, “the dynamic equilibrium between Yin and Yang determines the status or phase of a given object”⁸³. Disease may occur if there is an imbalance between any pair of opposites, and different medicines can treat yin or yang, or hot or cold extremes depending on the way the patient presents⁸⁴. Herbs will be classified based on whether they increase Qi, Yin, Yang, or blood, with Qi invigorating and blood nourishing herbs

⁸¹ Ibid.

⁸² Ibid.

⁸³ Leong et al., “Yang/Qi Invigoration.”

⁸⁴ Wu et al., “Seeing the Unseen of Chinese Herbal Medicine Processing (Paozhi).”

displaying both yin and yang qualities⁸⁵. Tissues, substances, and fluids are classified Yin within TCM theory, while the processes and the functions of bodily systems are classified as Yang. Primordial Qi is considered Yang, while Pectoral Qi is designated Yin⁸⁶. Similarly, certain bodily systems are linked in pairs and called “Zang-Fu organs”; for instance, the spleen and lung are Zang-Fu organs. Zang-Fu organs often display interaction, and disorders of paired organs often share symptoms⁸⁷. The connection of these organs together is often difficult to understand from a western systems perspective, as they often do not display clear physiological links⁸⁸. The link instead might be more symbolic in nature, with an organ representing a function rather than being characterized by it⁸⁹.

TCM’s Five Organs Theory outlines the purposes of the five main internal organs: heart, liver, spleen, lungs, and kidney. The heart is considered the head of the five organs, connecting the mind and blood vessels. It represents the cardiovascular and nervous systems. The liver stores blood and corresponds to the release of emotion and purpose-driven signals. It represents the endocrine, hematopoietic, nervous, digestive, and reproductive systems. The spleen is linked to “dryness” transportation and transformation of lymph, as well as digestion, hematopoiesis, muscles, and the immune system, and the lungs are described to be responsible for dispersing and descending motion and

⁸⁵ Leong et al., “Yang/Qi Invigoration.”

⁸⁶ Ibid.

⁸⁷ Wei Yao Hongwei Yang Guanghong Ding, “Mechanisms of Qi-Blood Circulation and Qi Deficiency Syndrome in View of Blood and Interstitial Fluid Circulation.”

⁸⁸ BillMoyers.com, *Healing and the Mind*.

⁸⁹ Wu et al., “Seeing the Unseen of Chinese Herbal Medicine Processing (Paozhi).”

coordination, representing the respiratory and immune systems. The kidney functions as storage for essential substances, oversees growth, development, and metabolism, and is generally regarded as the base in terms of all organs⁹⁰. At first glance, these organs seem to be given far more credit than they deserve in terms of physiological function. In some cases, the connection can be traced; the kidney filters blood for metabolic purposes and the lungs bring in air to “descend” throughout the body. The liver represents signaling and signaling as a function is correctly connected to the endocrine and nervous systems. Yet the domains of each of the five organs overlap considerably, and it is unlikely that, through a western lens, the spleen can be practically tied to skeletal muscular function. What is evident, however, is that the five organs theory describes a holistic and interconnected understanding of bodily function. In describing these five interconnected classes, TCM describes five categories of responsibility that allow the human body to operate as a whole. The five organs thus are representative of, and not necessarily literally responsible for, all of the functions of the human body. When disease presents, TCM practitioners will categorize it in terms of deficiency of yin, yang, qi, or blood, and they will often specify it according to its organ: for example, as “spleen qi deficiency”. There are nine “constitutions” of the human body; one is healthy and balanced, and there are eight different unbalanced ones⁹¹. Qi deficiency is one of the most familiar ones⁹².

⁹⁰ Jing Wang and Xingmao Wu, “Traditional Chinese Medicine Jiuwei Zhenxin Granules in Treating Depression: An Overview,” *Neuropsychiatric Disease and Treatment* 16 (October 31, 2020): 2237–2256.

⁹¹ Ke Ma et al., “Qi-Deficiency Related Increases in Disease Susceptibility Are Potentially Mediated by the Intestinal Microbiota,” *Evidence-Based Complementary and Alternative Medicine* 2018 (October 23, 2018): 1–10.

⁹² Chiang HC et al., “From Theory to Clinic: Key Components of Qi Deficiency in Traditional Chinese Medicine,” *Alternative Therapies in Health & Medicine* 18, no. 6 (December 11, 2012): 28–36.

Qi-Deficiency as a Diagnosis

Qi deficiency as a disease pattern originated with the *Internal Classic (Huangdi Neijing)*, an ancient text upon which modern Chinese physicians built their philosophy and practice⁹³. Among modern practitioners, the exact definition of Qi deficiency varies. A series of guidelines for diagnosis were developed by Chinese experts in 1986 and then again in 2002, but many physicians base their systems of diagnosis on individual clinical experience⁹⁴. Yet one study found a consensus between 85.71% of practitioners and experts interviewed that qi deficiency could be defined as a “series of manifestations of functional decline in the whole body”⁹⁵. They also agreed that some expressions of Qi deficiency are universal, while others are specific to certain organs. General consensus on the symptoms of Qi deficiency includes complaints regarding the ability to complete daily activities, abnormal sweating, shortness of breath, a look of exhaustion, a tongue that is tender, swollen, or pale, and weakness in speaking, and most importantly, fatigue⁹⁶. A lack of strength is also accompanied by decreased resistance to disease⁹⁷. Risk factors for qi deficiency include food scarcity, poor sleep, poor work/life balance, a physically demanding job, overwork or work stress, chronic disease or a tendency to get sick easily⁹⁸. Qi exhaustion can occur as a result of modern medical treatments as well,

⁹³ Ibid.

⁹⁴ Ibid.

⁹⁵ Ibid.

⁹⁶ Ibid.

⁹⁷ Sun et al., “To Unveil the Molecular Mechanisms of Qi and Blood through Systems Biology-Based Investigation into Si-Jun-Zi-Tang and Si-Wu-Tang Formulae.”

⁹⁸ Chiang HC et al., “From Theory to Clinic.”

such as chemotherapy or major surgery⁹⁹. Qi deficiency is said to be caused by a “dysfunction or incoordination of Zang-Fu organs”¹⁰⁰, and is considered more likely to occur if a person has “consumptive disease in four elements or Zang-Fu”¹⁰¹.

From this it is easy to draw comparisons between Qi deficiency and disorders such as chronic fatigue syndrome and metabolic syndrome. Chronic fatigue syndrome is characterized by a persistent, debilitating, and clinically unexplained fatigue, and often affects the daily life of its sufferers¹⁰². Metabolic syndrome can be diagnosed as spleen deficiency, dampness obstruction, phlegm and blood stasis, qi stagnation and dampness obstruction, and/or qi-yin deficiency¹⁰³. Spleen qi deficiency is described with symptoms such as fatigue, abdominal distention, and boredom, among others, and is related to chronic fatigue syndrome, hypertension, chronic gastritis, and IBS¹⁰⁴. From this we can gather that specific forms of qi deficiency, as associated with different organs, may have their own symptoms or linked disorders, which broadens the potential reach of Qi related illness. Other studies found that qi deficiency is linked to early stage cancer, heart disease, diabetes, and depression, while having the balanced constitution (PH),

⁹⁹ Ibid.

¹⁰⁰ Wei Yao Hongwei Yang Guanghong Ding, “Mechanisms of Qi-Blood Circulation and Qi Deficiency Syndrome in View of Blood and Interstitial Fluid Circulation.”

¹⁰¹ Chiang HC et al., “From Theory to Clinic.”

¹⁰² Leong et al., “Yang/Qi Invigoration.”

¹⁰³ Fengli Sun et al., “A Placebo-Controlled Study on the Treatment of Metabolic Syndrome of Qi Stagnation and Dampness Obstruction Related to Atypical Antipsychotics with Traditional Chinese Medicine (TCM).” *Evidence - Based Complementary and Alternative Medicine* 2020 (August 31, 2020): NA-NA.

¹⁰⁴ Xin Wang et al., “Network Pharmacology to Uncover the Biological Basis of Spleen Qi Deficiency Syndrome and Herbal Treatment,” *Oxidative Medicine and Cellular Longevity* 2020 (August 27, 2020): 1–20.

characterized by energy, fitness, a strong pulse, and good sleep, has been demonstrated as a protective factor against these health risks¹⁰⁵.

Western Analogs to Qi-Deficiency

Based on these sets of symptoms and related health risks, it is evident that Qi-deficiency is multifaceted, and cannot be tied to a specific western disease. This is evidenced in the various biological mechanisms that TCM herbal treatments labeled “Qi invigorating” work through. Two of the main biological mechanisms for Qi invigoration, however, seem to be immune support and mitochondrial energy production. Herbs labeled “yin-nourishing” often exacted their effects on the immune system, and were described as boosting defensive Qi. “Yang invigorating” herbs, on the other hand were found to increase ATP production in the mitochondria¹⁰⁶. These can be linked to the nutrition linked metabolism and the TCM label of Nutritive Qi. Depending on the patient presentation, one or both of these types of medicines might be prescribed for Qi-deficiency.

The symptoms of Qi deficiency as decreased disease resistance and fatigue support the connection of Qi to immune function. Those diagnosed with Qi deficiency are often less active in general, which might be a result of increased energy requirement related to the presence of infection or disorder¹⁰⁷. Tumor cells, partially a result of failure of the immune system to control unregulated cell growth, are considered a consequence

¹⁰⁵ Ma et al., “Qi-Deficiency Related Increases in Disease Susceptibility Are Potentially Mediated by the Intestinal Microbiota.”

¹⁰⁶ Leong et al., “Yang/Qi Invigoration.”

¹⁰⁷ Wei Yao Hongwei Yang Guanghong Ding, “Mechanisms of Qi-Blood Circulation and Qi Deficiency Syndrome in View of Blood and Interstitial Fluid Circulation.”

of Qi deficiency in TCM¹⁰⁸. According to TCM, cancer occurs when the body's defenses are down, as is the case with a depletion of Defensive Qi¹⁰⁹. As one TCM philosopher put it, "pathogenic Qi cannot invade the body if Health-Qi remains strong"¹¹⁰. By this, the philosopher does not just mean virus or bacterial pathogens, but any holistic threat to the body¹¹¹. The strengthening of Qi is the main strategy for cancer treatment in TCM¹¹². Rather than focusing on a specific tissue with removal or regression, TCM focuses on the body holistically, treating it as an integrated system¹¹³. Tumors are a symptom of a larger and complex issue, and thus the treatment strategy is bolstering the life force, that is the health of the entire body. Thus treatment with Qi improving medicines is not a catch all, but a specific strategy of approaching the body as a whole.

Studies of herbal concoctions prescribed for the strengthening of Qi have found various mechanisms through which the herbs are effective for anti-cancer and immune-boosting treatment. Ginseng polysaccharide and Astragalus polysaccharide have been found to suppress tumor growth by inhibiting angiogenesis, inducing apoptosis, and activating various immune system factors¹¹⁴. Astragalus root has also been found to

¹⁰⁸ Yi-Xin Jiang et al., "Screening Five Qi-Tonifying Herbs on M2 Phenotype Macrophages," *Evidence-Based Complementary and Alternative Medicine* 2019 (January 15, 2019): 1–8.

¹⁰⁹ W. Hsiao and Liang Liu, "The Role of Traditional Chinese Herbal Medicines in Cancer Therapy – from TCM Theory to Mechanistic Insights," *Planta Medica* 76, no. 11 (August 2010): 1118–1131.

¹¹⁰ Wang et al., "Network Pharmacology to Uncover the Biological Basis of Spleen Qi Deficiency Syndrome and Herbal Treatment."

¹¹¹ Hsiao and Liu, "The Role of Traditional Chinese Herbal Medicines in Cancer Therapy – from TCM Theory to Mechanistic Insights."

¹¹² Jiang et al., "Screening Five Qi-Tonifying Herbs on M2 Phenotype Macrophages."

¹¹³ Hsiao and Liu, "The Role of Traditional Chinese Herbal Medicines in Cancer Therapy – from TCM Theory to Mechanistic Insights."

¹¹⁴ Zhibo Dang et al., "Comparative Effectiveness and Safety of Traditional Chinese Medicine Supporting Qi and Enriching Blood for Cancer Related Anemia in Patients Not Receiving

reduce the side effects of chemotherapeutic drugs¹¹⁵. Tripolide, a compound purified from a herbal medicine, inhibits the cellular Caspar inhibitor that is elevated in leukemia cells and promotes apoptosis¹¹⁶. A study of five different qi tonifying herbs found they influenced a wide range of biochemical mechanisms in macrophages, targeting different points in the signaling pathways related to tumor growth and inhibition. One type of macrophages, designated M1, receives signaling factors that activate nitric oxide synthase, which causes cell toxicity. Another type, M2, does the opposite, increasing cell-growth and metastasis. M2 macrophages have elevated expression of STAT-6, a transcription activator for Arginase-1, which inhibits NO-mediated pathways¹¹⁷. Yet some of the herbs designed to strengthen qi inhibited STAT-6, causing macrophage differentiation to type M1 rather than M2, effectively reducing the ability of tumors to grow and migrate. Another of the herbs studied apparently downregulated Arg-1 expression, and another appeared to work on miRNA-55, which acts through a different pathway to differentiate macrophages to M1 or M2¹¹⁸.

In fact, many of the herbs used to treat Spleen Qi Deficiency Syndrome (SQD syndrome) work to inhibit oxidative stress, similar to the nitric oxide pathways described by Jiang et al. Wang et al. found that many of the SQD syndrome were linked to harmful effects on the immune response system as a result of a decrease in the transcription of an

Chemoradiotherapy: A Meta-Analysis and Systematic Review,” *Drug Design, Development and Therapy* Volume 13 (December 2018): 221–230.

¹¹⁵ Hsiao and Liu, “The Role of Traditional Chinese Herbal Medicines in Cancer Therapy – from TCM Theory to Mechanistic Insights.”

¹¹⁶ Ibid.

¹¹⁷ Jiang et al., “Screening Five Qi-Tonifying Herbs on M2 Phenotype Macrophages.”

¹¹⁸ Ibid.

antioxidant molecule led to decreased activity in NK cells and T lymphocytes¹¹⁹. Leong et al. similarly found that oxidative stress threatened the structural integrity of mitochondria and thus metabolic energy production¹²⁰. In this way, mechanisms of biological malfunction may impact both the immune system and energy metabolic pathways simultaneously. A SQD syndrome might be designated Cold or Hot, with Hot referring to an inflammatory response disorder, and Cold referring to cases with decreased energy metabolism¹²¹. SQD syndrome shares many symptoms and characteristics with Chronic Fatigue Syndrome (CFS), which has been linked with immune system dysfunction as well as mitochondrial dysfunction¹²². CFS is characterized by fatigue, increased susceptibility to illness and obesity¹²³. Individuals with Qi deficiency have been found to have higher BMI's than healthy populations, lower muscular strength, and fatigue as well¹²⁴.

With Qi representing vitality it makes sense that Qi related disorders might be related to energy depletion or issues with metabolism. Leong et al. dubbed the mitochondrion the “functional unit of qi” because of its role in bioenergetics and life in general¹²⁵. Studies of patients with CFS found that their skeletal muscle reflected

¹¹⁹ Wang et al., “Network Pharmacology to Uncover the Biological Basis of Spleen Qi Deficiency Syndrome and Herbal Treatment.”

¹²⁰ Leong et al., “Yang/Qi Invigoration.”

¹²¹ Wang et al., “Network Pharmacology to Uncover the Biological Basis of Spleen Qi Deficiency Syndrome and Herbal Treatment.”

¹²² Leong et al., “Yang/Qi Invigoration.”

¹²³ Ibid.

¹²⁴ Ma et al., “Qi-Deficiency Related Increases in Disease Susceptibility Are Potentially Mediated by the Intestinal Microbiota.”

¹²⁵ Leong et al., “Yang/Qi Invigoration.”

decreased mitochondrial structural integrity, as well as decreased metabolic activity¹²⁶. A study of mice diagnosed with blood-qi deficiency found the mice to have abnormal glycolysis and gluconeogenesis activity¹²⁷. This might be the result of abnormal gene expression in the mitochondria, which prevents efficient metabolic processes and/or the influence of oxidative stress. Another study linked qi deficiency with energy metabolism through the activity of gut microbiota. The microbiota of those with Qi deficiency were demonstrated to process more carbohydrates than fatty acids, and the opposite was true for healthy individuals¹²⁸. The processing of lipids boosts overall metabolisms rates and elevate thermogenesis capacity, and short chain fatty acids, especially butyrate, are important for immune support as they increase expression of immune surveillance factors such as antimicrobial peptides¹²⁹. They also influence the differentiation of T cells, which suppress allergic inflammatory responses linked to chronic gastritis¹³⁰. At the same time, fatty acids serve as a source of ATP in intestinal epithelial cells. Thus it is proposed that this shift from primarily lipid metabolism to carbohydrate metabolism in the microbiota of Qi deficient individuals leads to the symptoms of lower energy and overall poorer health. TCM herbal medicines such as the SJZT formula work on all of these factors of qi deficiency related illness, for instance boosting phagocytosis of macrophages, regulating the cAMP signaling pathway and thus the cell cycle and metabolism, and recovering

¹²⁶ Ibid.

¹²⁷ Sun et al., “To Unveil the Molecular Mechanisms of Qi and Blood through Systems Biology-Based Investigation into Si-Jun-Zi-Tang and Si-Wu-Tang Formulae.”

¹²⁸ Ma et al., “Qi-Deficiency Related Increases in Disease Susceptibility Are Potentially Mediated by the Intestinal Microbiota.”

¹²⁹ Ibid.

¹³⁰ Ibid.

intestinal micro flora¹³¹. The TCM practice of pairing herbal medicines with physical medicine such as qigong might compound positive effects, as physical exercise has been found to improve the oxidative capacity of muscle cells in those with mitochondrial dysfunction¹³².

Qi as a Catalyst for Synergistic Medicine

The multi-target nature of TCM medicines is a reoccurring theme in each of these studies of disorders and treatments. Most herbal concoctions prescribed for Qi deficiency and other disorders involve numerous active ingredients, which are prepared and mixed specifically for each patient in a technique unique to TCM called “processing”¹³³. processing is tailored to an individual’s pattern of symptoms and illness, and for this reason there are innumerable concoctions and combinations in TCM pharmaceuticals¹³⁴.

Processing can include “cutting, crushing, roasting, baking, and stir-frying”¹³⁵ the ingredients, the type of processing allowing a single ingredient to be effective in different ways. Adding heat or reacting one compound with another can cause chemical changes to the concoction that give ingredients different potencies, reduce toxicity, remove impurities, minimize side effects, or improve taste¹³⁶. For instance, processing of the herb ginseng by steaming gives a very different chemical profile; the steamed version has less

¹³¹ Sun et al., “To Unveil the Molecular Mechanisms of Qi and Blood through Systems Biology-Based Investigation into Si-Jun-Zi-Tang and Si-Wu-Tang Formulae.”

¹³² Leong et al., “Yang/Qi Invigoration.”

¹³³ Wu et al., “Seeing the Unseen of Chinese Herbal Medicine Processing (Paozhi).”

¹³⁴ Hsiao and Liu, “The Role of Traditional Chinese Herbal Medicines in Cancer Therapy – from TCM Theory to Mechanistic Insights.”

¹³⁵ Wu et al., “Seeing the Unseen of Chinese Herbal Medicine Processing (Paozhi).”

¹³⁶ Ibid.

polar ginsenosides which have been shown to have stronger effects against cancer, diabetes, and inflammation¹³⁷. Mixing ingredients with expedients such as wine, vinegar, honey, or rice can improve solubility of the active ingredients or or cause chemical reactions that produce a more effective medicine¹³⁸. Up to twenty different herbs and ingredients can be used in once concoction, combined based on the principle of “Peiwu”¹³⁹. They follow the rule of “Emperor-Minister-Assistant-Courier” to combine ingredients that work together to facilitate the action of the medicine, with the emperor representing the main ingredient targeting the cause of disease, the minister addressing symptoms, the assistant reducing the side effects, and the courier improving bioavailability or enhancing the activity of the other ingredients¹⁴⁰. The effects of each ingredient may be additive, or they may be synergistic, with each enhancing the effectivity of the other¹⁴¹.

Synergistic effects are intrinsic in TCM philosophy and largely inform the structure on which Chinese medicines are built¹⁴². Some synergistic drugs are pharmacodynamic, meaning two or more agents work on the same biological target, positively interacting to produce stronger effects. Others are pharmacokinetic, with one ingredient improving absorption, distribution, or metabolism of the active ingredient and

¹³⁷ Ibid.

¹³⁸ Ibid.

¹³⁹ Xian Zhou et al., “Synergistic Effects of Chinese Herbal Medicine: A Comprehensive Review of Methodology and Current Research,” *Frontiers in Pharmacology* 7 (2016), accessed January 15, 2021.

¹⁴⁰ Ibid.

¹⁴¹ Ibid.

¹⁴² Ibid.

therefore improving its effects¹⁴³. In both cases, the combination of drugs produces an effect stronger than one ingredient on its own. A study conducted by Lin et al in 2007 demonstrated the benefit of this approach while evaluating compounds in a TCM treatment. When any one of the active compounds was removed from the concoction, the anti-cancer effects of the drug were significantly reduced¹⁴⁴.

Western medicine shares this concept of combination therapy, prescribing cocktails of medications for illnesses such as HIV, allergies, or headache¹⁴⁵. However, western combination therapy usually does not incorporate the holistic to healing that TCM medicines do. Because they do not separate body systems, treatments can be broad and all encompassing. One concoction meant to supplement Qi and nourish the heart and spleen includes nine herbs that work on at least ten different neurotransmitters and signaling factors in addition to exacting effects in immune system regulation, neuron effectivity and damage protection, and endocrine function¹⁴⁶. Another classic Qi promoting concoction works on mechanisms of neurotransmitters and neurotrophins, the hypothalamic pituitary adrenal axis, amino acids, lipid and energy metabolism, and inflammatory factors¹⁴⁷. All of these drugs combine to create a multifaceted approach that improves multiple biological systems at once; even individual ingredients in TCM

¹⁴³ Ibid.

¹⁴⁴ Ibid.

¹⁴⁵ Sun et al., “To Unveil the Molecular Mechanisms of Qi and Blood through Systems Biology-Based Investigation into Si-Jun-Zi-Tang and Si-Wu-Tang Formulae.”

¹⁴⁶ Wang and Wu, “Traditional Chinese Medicine Jiuwei Zhenxin Granules in Treating Depression.”

¹⁴⁷ Ibid.

concoctions may have multiple effects in and of themselves¹⁴⁸. This is more common because TCM concoctions involve whole ingredients where western pharmaceuticals usually involve an isolated active ingredient alone. A number of studies have shown that the use of an isolated, processed ingredient causes increased side effects or decreased effectivity than the crude ingredient, though in other cases the crude ingredient includes toxic aspects or excessive dosage of an active ingredient¹⁴⁹. For this reason, processing in TCM is employed to adjust potency of the ingredients, but it also maintains the integrity of the natural ingredient in a way that allows synergistic effects to act.

Possibilities of Integration

As globalization continues to interconnect the world, TCM and western medicine increasingly seek to learn from each other's medical knowledge. Because of cultural differences, however, the scientific evidence and standardization that is prized in the West is less prevalent for TCM treatments, and so research to understand and confirm the efficacy of TCM treatments is a continuous process. Research is especially lacking in the United States due to the inability to patent herb-based medicines¹⁵⁰. Germany's Commission E, a government funded project to provide detailed accounts of herbal medicines, serves as an example of the possibilities of integration of eastern remedies once they have been well studied¹⁵¹.

¹⁴⁸ Zhou et al., "Synergistic Effects of Chinese Herbal Medicine."

¹⁴⁹ Lynn Freeman and Frank Lawlis, *Mosby's Complementary Medicine and Alternative Therapies: A Research Based Approach* (St. Louis, Mo.; London: Mosby, 2000).

¹⁵⁰ Ibid.

¹⁵¹ Ibid.

The complexity of TCM medicines makes the research process a more difficult one, as the synergistic and additive effects can be complicated to map¹⁵². Most TCM pharmacologists judge mixtures qualitatively rather than quantitatively¹⁵³, making these medicines inconsistent in their concentrations and therefore unreliable and possibly dangerous for lack of regulation¹⁵⁴. The variance in potential combinations also makes the task of standardizing or studying treatments difficult¹⁵⁵. Yet a number of mathematical and chemical methods are being developed that allow synergistic effects to be tracked, purities to be measured, and extracts to be identified and packaged at standard concentrations¹⁵⁶¹⁵⁷. New tools that pick up chemical markers allow TCM pharmacists to measure concentration to the hundredth of a percentage instead of relying on taste as a monitor of toxicity while processing¹⁵⁸. This allows for increased consistency and safety of medicines even while mechanisms of synergy are poorly understood. Increased knowledge of side effects and cross reactions has led to the ability to actively incorporate

¹⁵² Zhou et al., “Synergistic Effects of Chinese Herbal Medicine.”

¹⁵³ Wu et al., “Seeing the Unseen of Chinese Herbal Medicine Processing (Paozhi).”

¹⁵⁴ Freeman and Lawlis, *Mosby’s Complementary Medicine and Alternative Therapies*.

¹⁵⁵ Chunsheng Zhu et al., “Quantitative Analysis of Multi-Components by Single Marker—a Rational Method for the Internal Quality of Chinese Herbal Medicine,” *Integrative medicine research* 6, no. 1 (2017): 1–11.

¹⁵⁶ Zhou et al., “Synergistic Effects of Chinese Herbal Medicine.”

¹⁵⁷ Zhu et al., “Quantitative Analysis of Multi-Components by Single Marker—a Rational Method for the Internal Quality of Chinese Herbal Medicine.”

¹⁵⁸ Wu et al., “Seeing the Unseen of Chinese Herbal Medicine Processing (Paozhi).”

TCM treatments with western ones, at times creating combination therapies that are stronger than either system on its own¹⁵⁹¹⁶⁰.

There is still a long way to go for the majority of TCM treatments to be accepted within the careful system of Western medicine, though it is evident that Qi-based treatments, though explained in different words, can be understood through a biochemical systems approach. Qi deficiency diseases have clinical manifestations that can be observed at the gene and protein levels¹⁶¹. Abstract theories of Qi add a barrier to understanding that must first be sifted through before the mechanisms can be approached. But it is the principle of Qi and the rest of TCM theory that makes biochemical treatments effective: the targeting of the body as a whole, and even the person as a whole, provides a valuable asset to medicine preparation. It might be said that treating Qi, because of its holistic nature, increases effectiveness of treatments simply because it looks at the body as a whole, seeking to heal the entire body, through which Qi flows, and thereby impacting all of the factors that affect a single diseased system.

¹⁵⁹ Zhou et al., “Synergistic Effects of Chinese Herbal Medicine.”

¹⁶⁰ Wang and Wu, “Traditional Chinese Medicine Jiuwei Zhenxin Granules in Treating Depression.”

¹⁶¹ Sun et al., “A Placebo-Controlled Study on the Treatment of Metabolic Syndrome of Qi Stagnation and Dampness Obstruction Related to Atypical Antipsychotics with Traditional Chinese Medicine (TCM).”

CHAPTER 3

Psychological Mechanisms of Qi-Based Healing

Placebos and the Impact of Belief

In Xinjiang, China, a group of people with chronic diseases flock to the desert to bury themselves in the sand. Participants believe that the hot sand is beneficial to “cold Qi diseases”, the sensation of burning and excessive sweat taken as signs that the therapy is working (Wang et al.). Interestingly, this treatment is opposite to Western treatments for diseases such as rheumatism and arthritis, which usually involve cool sensations such as swimming in water (Wang et al). But though heat and cool may play a role in making patients feel better, a significant part of the healing experience appears to be linked to individual beliefs in the treatment and the link between the emotional suffering in disease and holistic care.

One of the main questions regarding TCM treatments is whether the treatments are physiologically beneficial or based on belief in the treatment alone. In many cases there is simply not enough data to make informed decisions on the science of a TCM treatment or diagnosis. In the previous chapters, I have discussed ways in which TCM treatments affect the body physiologically and biochemically. Many aspects of TCM and even Qi-based treatments have biological analogs in western medicine and can be understood within the scientific medical model, and increased research will allow a number of TCM treatments to be validated as scientifically accurate and beneficial. Other

aspects of how TCM and Qi-based treatments are beneficial to the population, however, fall into the realm of biopsychosocial interaction and philosophical worldview and require a more complex connection to health than cellular and chemical mechanism.

The influence of belief on the effectivity of a treatment is well documented; in scientific research, those treatments that do not have biochemical effects on their own but still give significant results are called placebos¹⁶². One study found that placebos can reduce pain by 30-50%, a difference that is comparable to that brought about by opioids and NSAIDS¹⁶³. PET scans of the brain demonstrate that similar regions of the brain are activated for placebo and opioid agonists, implying that similar brain-circuitry mechanisms, though not exactly the same, are present in placebo treatments and biochemical treatments for pain relief¹⁶⁴. The placebo based mechanisms activated more regions of the brain involved with cognitive-evaluation, but both placebo and opioids activated the periaqueductal gray (PAG), suggesting that both involved the neural pathways that activate natural painkiller neurotransmitters¹⁶⁵. Another study suggested involvement of behavioral conditioning of the dopaminergic system as playing a part in placebo treatments, with the expectation of a positive reward, such as pain relief, activating the release of dopamine, a natural painkiller¹⁶⁶. In this way, cognitive evaluation of the circumstances surrounding a patient would activate self-regulation

¹⁶² Javeria Ali Hashmi, "Placebo Effect: Theory, Mechanisms and Teleological Roots," *International review of neurobiology* 139 (2018): 233–253.

¹⁶³ Ibid.

¹⁶⁴ Luana Colloca, "Placebo Effects in Pain," *International review of neurobiology* 153 (2020): 167–185.

¹⁶⁵ Ibid.

¹⁶⁶ Ibid.

mechanisms in the neural network that reduced pain. This mechanism is called mental cueing¹⁶⁷.

All medical treatments, in TCM as well as in the West, involve some amount of mental cueing. Patients have an expectation for a treatment to work or not work, or they expect a doctor to be able to help or not, and this can influence the effectivity of a drug. This is especially true patients being treated for pain related illnesses, as pain is highly subjective in its experience¹⁶⁸. Controlled studies have shown that priming a patient to expect a treatment to be more painful will cause them to experience it as more painful in experimental contexts, and that belief about the effectivity of a name brand drug, or more expensive drug, influences the amount of pain relief patients report¹⁶⁹. This demonstrates how the brain contextualizes experience and ascribes relevant meaning that influences how a person reacts to different healing experiences¹⁷⁰.

A treatment that works solely based on placebo can thus be considered the minimum effective treatment, assuming the patient has a positive view of the treatment. This is not as powerful of a medicine compared to one that acts biochemically to encourage healing of the body biochemically. For one, ability for placebo treatments to produce long lasting effects is debatable¹⁷¹. Second, the effectivity of the medicine is reliant on an expectation of healing, which can be less beneficial due to the fact that

¹⁶⁷ Hashmi, "Placebo Effect."

¹⁶⁸ Ibid.

¹⁶⁹ Ibid.

¹⁷⁰ Ibid.

¹⁷¹ Ibid.

belief in something can be so easily broken¹⁷². There is also concern about treatments that are merely consoling in nature, aiming to please patients by the deception that there is treatment going on, when in reality the only treatment is that of mental cueing response. In this way placebo has been called a ploy to “gratify patient’s needs for being treated” rather than true healing¹⁷³. However, others have pointed out that if placebo-based therapies do no harm, and they benefit the public, then they are still valuable¹⁷⁴.

Regardless, belief in the effectivity of a treatment may keep people coming back to a treatment, whether it is placebo or not, due to the real and significant effects of mental cueing. In fact, one reason that some patients might find alternative medicines more effective might have to do with negative expectations of the efficacy of western medicines, and a lack of negative cueing associated with a different medical system such as TCM¹⁷⁵. This sense of expectation or past experience might also explain why Chinese ex patriots continue to prefer TCM even when offered western based medicines¹⁷⁶; they may not expect the western treatments to work, and mental cueing confirms their suspicions. Beliefs are then reinforced when a concurrent result occurs. How any medical treatment works on an individual will be dependent on their expectations, past experiences, and emotional state towards the treatment or medical caregiver¹⁷⁷.

¹⁷² Daniel Callahan, ed., *The Role of Complementary and Alternative Medicine: Accommodating Pluralism*, Hastings Center studies in ethics (Washington, D.C: Georgetown University Press, 2002).

¹⁷³ Colloca, “Placebo Effects in Pain.”

¹⁷⁴ Callahan, *The Role of Complementary and Alternative Medicine*.

¹⁷⁵ Hashmi, “Placebo Effect.”

¹⁷⁶ Haiying Kong and Elaine Hsieh, “The Social Meanings of Traditional Chinese Medicine: Elderly Chinese Immigrants’ Health Practice in the United States.,” *Journal of immigrant and minority health* 14, no. 5 (2012): 841–849.

¹⁷⁷ Hashmi, “Placebo Effect.”

The likelihood that a person believes in the effectivity of a treatment is often linked to a sensory experience that can be connected to healing that is unseen. Tactile, physical links have been reported as an important factor in the experience of healing¹⁷⁸. With our desert sand example, the effectivity of the treatment was reinforced by sand sticking to the bodies of participants. When the person remained in the hot sand for an extended period of time, they often began to sweat, and this was considered a sign of the treatment working. The more physical evidence of sweating, the more the people believed the treatment has affected their bodies¹⁷⁹. A similar experience with Qi-based treatments may be an important factor in anecdotal experiences of Qi¹⁸⁰. Thus we see possibility for the phenomenon described by placebo effect studies: the more symbolic tells there are for a treatment, the stronger the mental cueing effect will be¹⁸¹.

The fact that the intensity at which pain is experienced can be controlled through top-down processing expectations nods to the potential of an internal locus of control over symptoms¹⁸². This is something that is a major characteristic of TCM philosophy and may play a major role in making TCM effective for chronic pain-based illnesses. A qualitative study interviewing patients and practitioners of TCM therapies found that “Self-care advice” given as part of TCM therapy, such as discussions about diet, OTC

¹⁷⁸ Ke Wang, Qingming Cui, and Honggang Xu, “Desert as Therapeutic Space: Cultural Interpretation of Embodied Experience in Sand Therapy in Xinjiang, China,” *Health & place* 53 (2018): 173–181.

¹⁷⁹ Ibid.

¹⁸⁰ Terry Oleson, “The Flow of Qi: Metaphysical Metaphor or Physical Reality,” *Medical Acupuncture* 22, no. 3 (September 1, 2010): 157–160.

¹⁸¹ Hashmi, “Placebo Effect.”

¹⁸² Ibid.

medications, exercise, rest and relaxation were considered “empowering” to the patients, allowing them to take an active role in their own health¹⁸³. This may be because an internal locus of control helps a patient gain a sense of hope of improvement due to their ability to change their symptoms or experiences. A sense of hope for improvement, in turn can often help reduce pain¹⁸⁴. Additionally, many of the reasons for illness or symptoms may be linked to lifestyle-based causes; thus patient may be able to treat their illness by enacting lifestyle changes. An internal locus of control, established through helpful explanation, self-care advice, and physician empathy and support, can lead to a belief of the patient in their own ability to change their wellbeing¹⁸⁵ and thus improvements in patient health can occur based on aspects entirely in the patient’s control.

Mind-Body Interaction

Research into cognition has emphasized the connection between highly conceptual and emotional acts and bodily experiences; for instance, maintenance of a slouched position or frown induced negative mood or interpretation of visuals, compared to an upright position, and a negative mood likewise leads to physical tells of that emotion¹⁸⁶. Bodily expression may also impact internal emotion through neural and

¹⁸³ Michael Armour, Hannah G. Dahlen, and Caroline A. Smith, “More Than Needles: The Importance of Explanations and Self-Care Advice in Treating Primary Dysmenorrhea with Acupuncture,” *Evidence-based complementary and alternative medicine* 2016 (2016): 3467067–11.

¹⁸⁴ Ibid.

¹⁸⁵ Ibid.

¹⁸⁶ Kamila Osypiuk, Evan Thompson, and Peter M. Wayne, “Can Tai Chi and Qigong Postures Shape Our Mood? Toward an Embodied Cognition Framework for Mind-Body Research,” *Frontiers in human neuroscience* 12 (2018): 174–174.

chemical feedback circuits¹⁸⁷. For this reason, connecting a mental concept to a physical action may reinforce it, and a physical act may allow a person to reorient a mental state to one of peace, confidence, or strength.

Qigong, a martial art meant to harness and regulate Qi, may be partially effective through this concept. A TCM principle called “Song”, which connects physical alignment of the body with mental states, is based on the idea that “physical shapes facilitate mental quantities, and mental states inform physical shapes”¹⁸⁸. Qigong instructors cite benefits of the practice to be increased relaxation, enhanced bodily awareness and acceptance, and modified perception of life events¹⁸⁹, and studies have shown Qigong’s ability to reduce stress and anxiety and to produce positive psychosocial effects related to self-awareness and social connection in group activity¹⁹⁰. Physiologically speaking, it has been shown to decrease heart rate, lipid levels, blood pressure, and stress hormone levels in the bloodstream¹⁹¹.

Similar to the idea of mental cueing, the health benefits of Qigong seem to be based on the exercise form’s employment of visualization, slow movement, and meditation. Effects of qigong on depression, according to a literature review, are supported by the biopsychosocial model, relaxation response theory, and evidence of the

¹⁸⁷ Ibid.

¹⁸⁸ Ibid.

¹⁸⁹ Juliette Gueguen et al., “Group Qigong for Adolescent Inpatients with Anorexia Nervosa: Incentives and Barriers,” *PloS one* 12, no. 2 (2017): e0170885–e0170885.

¹⁹⁰ Ibid.

¹⁹¹ Byeongsang Oh et al., “Effects of Qigong on Depression: A Systemic Review,” *Evidence-based complementary and alternative medicine* 2013 (2013): 1–8.

positive effects of exercise¹⁹². Central in the philosophy of TCM is a sense of integration between body and mind, and Qigong reflects this. If physical and mental symptoms often manifest when people do not properly process and regulate emotional states, and this often occurs due to neglect or lack of understanding of internal signals and sensations¹⁹³, then the process of qigong, which involves slow movements and stillness as opposed to fast movement and thoughts in addition to meditative guidance, presents a challenge that helps people become aware of their internal state and work through it¹⁹⁴.

A paper on the effects of meditation on health and longevity described three different forms of “mental training” that benefit health: focused attention, in which one focuses on a specific action or sensation, such as breathing, stepping, or a feeling of tightness, intentional awareness, in which the person visualizes internal energy states or emotions and wills a certain change or result, and open awareness, where the person becomes aware of thoughts or sensations as they appear and then lets them go¹⁹⁵. These meditative exercises, present in different aspects of Qigong, have been shown to be beneficial in a range of illness states regardless of whether the practitioner believes in the Daoist belief system on which the meditation is based¹⁹⁶. Most notably, meditative practice like this has been found to reduce stress response, which can cause pain, inflammation, and weakened immunity¹⁹⁷.

¹⁹² Ibid.

¹⁹³ Gueguen et al., “Group Qigong for Adolescent Inpatients with Anorexia Nervosa.”

¹⁹⁴ Ibid.

¹⁹⁵ Donald D. Davis, “Meditation, Taijiquan and Qigong: Evidence for Their Impact on Health and Longevity,” *Journal of Daoist studies* 11, no. 1 (2018): 207–230.

¹⁹⁶ Ibid.

¹⁹⁷ Ibid.

Meditation was also shown to allow an exchange of negative emotions for positive ones, as well as increases in kindness and compassion, likely due to the influence of meditation on perception, attention, learning, and memory that contribute to cognitive control¹⁹⁸. In this way, one can “change the body by changing the mind” and vice versa, depending on where a lack of healthy functioning is occurring¹⁹⁹. Becoming aware of the connection between the physical and mental gives the practitioner of Qigong control over their symptoms, utilizing physical actions to improve mental state, and mental actions such as meditation to improve the physical state. Those who engage in TCM in a general sense are found to often become more aware of their bodies, which in turn improves health²⁰⁰.

Metaphor as a Facilitator of Health

One adolescent who participated in a qigong study for depression found that the visualization of anchoring the balls of her feet to the ground, which she was exposed to through qigong, helped her feel anchored and strong. This helped her harness her emotions so that she could discuss difficult subjects during therapy²⁰¹. Experiences like this may be effective because of the link between the physical state and the mental state. But they might also be linked to the power of visualization and understanding the body through metaphor.

¹⁹⁸ Ibid.

¹⁹⁹ Ibid.

²⁰⁰ Callahan, *The Role of Complementary and Alternative Medicine*.

²⁰¹ Gueguen et al., “Group Qigong for Adolescent Inpatients with Anorexia Nervosa.”

At times, the metaphors and imagery employed in Qigong practice or TCM explanation can be abstract or confusing to western minds trained in rationalism. One participant mentioned the difficulty in being instructed to complete a move that was described as “the goose protecting itself from danger”²⁰², for instance, and the idea that there are energies such as Qi involved in an action can be difficult to grasp. Though once accepted as metaphor and applied as a “game”, liked playing pretend, the moves and imagination can become much more beneficial to those who are skeptical²⁰³. Other TCM patients have reported that explanations involving concepts such as “energy” or other TCM related analogies are easier to understand practically than those given by western physicians²⁰⁴, implying that the perceived efficacy of a treatment may be impacted by how well the patient understands it in relation to their body. In this case, an effective use of metaphor and explanation is important to patient care, as it affects how the patient views their illness and informs how they define their state of well-being.

Qi as a Metaphor

The metaphors people use are based on their own experience and are often informed by their larger culture or worldview²⁰⁵. For this reason, the metaphors used in TCM are often different from those used by westerners, especially in regard to the body

²⁰² Ibid.

²⁰³ Ibid.

²⁰⁴ Armour, Dahlen, and Smith, “More Than Needles.”

²⁰⁵ Sonya Pritzker, “The Role of Metaphor in Culture, Consciousness, and Medicine: A Preliminary Inquiry into the Metaphors of Depression in Chinese and Western Medical and Common Languages,” *Clinical Acupuncture and Oriental Medicine* 4, no. 1 (March 1, 2003): 11–28.

and illness²⁰⁶. Interestingly, metaphors, as common in everyday communication as they are in medical communication, often ascribe abstract concepts to physical, bodily experiences; for instance, the common phrase “life is a journey” is a metaphor for existence in terms of movement through space²⁰⁷. Conversely, descriptions of bodily experiences that are difficult to describe will often refer metaphorically to abstract concepts or other physical concepts, as in comparing immune response to war, or neural communication to computer wiring. Central to the efficacy of a metaphor, however, is that the listener must have a shared understanding of the analogic experience outlined in the metaphor²⁰⁸. If they do not, the listener will not understand the speaker.

It is possible that in some cases the TCM use of metaphors to explain disease may be easier to understand for the average patient than western scientific explanations. A patient who feels drained and exhausted might find an explanation of illness related to Qi, which describes dysfunction in terms of energy, relatable. The Chinese term associated with depression translates to words like restrained, stuck, or frustrated, and these words are metaphorical language for the experience of depression²⁰⁹. Likewise, the common descriptions of Qi as stuck, lacking flow, might bring to mind similar symptomatic experiences when regarded as metaphorical language; a lack of qi movement or “stuckness” might correlate with a feeling of physical limitation or emotional frustration²¹⁰. Improvements in well-being could be considered analogous to an inner

²⁰⁶ Ibid.

²⁰⁷ Ibid.

²⁰⁸ Ibid.

²⁰⁹ Ibid.

²¹⁰ Ibid.

state of harmony, which could be analogous to a proper flow of Qi²¹¹. The Chinese described Qi using poetic metaphors based on nature, such as air, wind, light and shade, water, fire, earth, wood, metal²¹². These are relational metaphors when used in relation to the body; they are based on shared characteristics in relation to other things, rather than exact descriptions of the thing²¹³.

Considering medical understanding through the lens of metaphors allows us to better grasp the more foreign aspects of TCM philosophy, in addition to providing insight into our own medical frames of reference. We can approach TCM with the idea that a disease described as “hot” or “wet” in TCM has more to do with the cultural background in which people develop language to describe the disease than a literal difference in understanding. At the root, the aspects of disease experienced by western and Chinese patients are the same, just described in different terms and analogies²¹⁴. Metaphors and imagery are often used in society to talk about the mysteries of existence; one author points to “Wind blowing around the body” as a metaphor often used in TCM, and argues that even the concept of Qi flowing in channels should be taken as a metaphor²¹⁵.

Because we are working in metaphors, which are inherently only partially descriptive of their subjects, to increase understanding of an abstract concept, it is better to incorporate multiple metaphors. Each metaphor might describe a piece of the truth²¹⁶,

²¹¹ Callahan, *The Role of Complementary and Alternative Medicine*.

²¹² Oleson, “The Flow of Qi.”

²¹³ Pritzker, “The Role of Metaphor in Culture, Consciousness, and Medicine.”

²¹⁴ Ibid.

²¹⁵ Kaz Wegmuller, “The Problem with Qi: Vitalism, Science and the Soul of Traditional Chinese Medicine,” *The Journal of Chinese medicine*, no. 108 (2015): 43-.

²¹⁶ Pritzker, “The Role of Metaphor in Culture, Consciousness, and Medicine.”

but we might get a more complete picture by combining them. By studying both western and TCM medical philosophy, we might find combinations of metaphors to more aptly describe the differentiated and integrated aspects of the body; how it is not one or the other but both.

Western language, particularly in medicine, focuses on precision and categorization, differentiation. But we often lack the language or metaphor to explain the interrelated nature of things, as is present in TCM²¹⁷. Conversely, TCM lacks some of the precision of scientific logic, as is present in psychology-based treatments that involve understanding and solving patterns of thought and emotion, that Western medicine is strong in²¹⁸.

The medical philosophy of Qi, yin and yang help by integrating concepts in an overall theory, creating a physical metaphor for an abstract concept. Qi philosophy also takes into account sociopolitical and relational aspects of life as affecting health, as well as environment, whereas western medicine often focuses on individual aspects of health and treats them individually²¹⁹. That Qi is used as a metaphor is not exclusive of the possibility that Qi as a force exists physically, but in the absence of empirical evidence to date, it is not necessary to abandon the concept. The philosophy of Qi in general has health related benefit as a metaphorical and effective tool in understanding health and the world.

²¹⁷ Ibid.

²¹⁸ Ibid.

²¹⁹ Ibid.

Qi as a Worldview

A study examining the correlations between spiritual beliefs of hemodialysis patients in Taiwan and health-related quality of life found that within the context of Chinese philosophies and religious practices, those with strong beliefs or no beliefs demonstrated higher quality of life than those with weak beliefs²²⁰. This suggests that having a strong sense of worldview, whether it involves a spiritual belief or the belief in the absence of the spiritual, is beneficial to health. This could be due to the sense of self confidence that comes from having an explanation for or understanding of disease and how it plays a role in life. Because Qi is not just another biological system made up of matter, but a “culturally distinct frame of reference”²²¹, it has the potential to improve quality of life through spiritual health. The principle of Qi in Chinese philosophy is that it is in everything that exists²²², so that an investigation of the world, as in scientific investigation, is really an investigation of Qi. But because the Qi is in a constant state of flux (i.e. the world is in a constant state of flux), every interaction of people with each other or with their environment is considered as a give and take or a balance, and everything is always moving. It applies to the physical and the conceptual, so Qi as a concept is really a way at looking at the world²²³. It is helpful to research TCM treatments to prove their efficacy, as that is what matters in treating patients, but ignoring the diagnostic theory and framework that has been effective in treating patients causes us to miss half of the picture.

²²⁰ Tze-Wah Kao et al., “Correlations Between Spiritual Beliefs and Health-Related Quality of Life of Chronic Hemodialysis Patients in Taiwan,” *Artificial Organs* 33, no. 7 (July 2009): 576–579.

²²¹ Wegmuller, “The Problem with Qi.”

²²² Ibid.

²²³ Ibid.

One of the main characteristics of this diagnostic theory, and what makes TCM so different from Western Medicine, is its emphasis on subjectivity. Western medicine, following the scientific tradition and its historical Judeo-Christian worldview, is opposite, focusing solely on objectivity. As Mokotawa puts it,

“In western religion...there is one God who knows all, is omnipotent, rules over Man, and created the world with a purpose...Accordingly, science in the west searches for uniform and universal rules, the “grand unified theory”— the natural product of a single omnipotent creator. Eastern science, based in its philosophy of no creator or purpose to creation, he writes, does not have this desire to explain truth, or a need to interpret a fact to give it value, but involves multiplicity of natural rules where things just are.”²²⁴

The result of this differing worldview is an emphasis on the subjective, where each person’s individual experience is valid compared to the experience of the collective²²⁵. Because of this, all that is necessary for an approach to health to be valid is that it works for that person. Personal experience is considered a reliable source of knowledge, which is contrary to the scientific model that believes interpretations of personal experience can often be misled²²⁶.

This produces a multitude of possible treatments, especially in places where scientific research has not found an objective treatment. In the west, if there is no scientifically backed treatment, the response is to do nothing rather than do harm. In TCM, belief in a treatment is more open minded, which opens the door to treatments that

²²⁴ Callahan, *The Role of Complementary and Alternative Medicine*.

²²⁵ Ibid.

²²⁶ Ibid.

may have been experienced as effective, even if they haven't been studied²²⁷. There is no risk of a symptom being written off as "non-medical" in TCM, because anything that affects health is included in possible causes of illness or symptoms²²⁸. Of course, there is still the risk that the treatment could do biological harm, regardless of the benefits of belief in its effectiveness.

Western medicine is cautious to add new treatments or perspectives because of this belief in one objective truth. Every time we add something, we either have to incorporate or adjust our philosophy, or make the addition congruous with our philosophic system. This may hinder Western medicine's openness to new ideas, as it will not add until it connects the dots and has the evidence. Yet in the perspective of a search for absolute truth, this is exactly the approach to take. From a TCM worldview this is not the goal, which is why they do not emphasize scientific research into treatments in the same way the West does. We can better understand the difference in action when we recognize this difference in perspective. We can also find value in Eastern medicine through western lens, but it requires sifting and additional understanding to apply, just as it would be for Eastern incorporation of Western science.

Medicine reflects culture in the way it interprets illness, assigns meaning, and defines the way life is supposed to be²²⁹. While science is a source of facts, culture is the source of values²³⁰. We cannot analyze medicine without considering its cultural context, so as we consider the concept of Qi, we must consider that its value may not lie in its

²²⁷ Kong and Hsieh, "The Social Meanings of Traditional Chinese Medicine."

²²⁸ Pritzker, "The Role of Metaphor in Culture, Consciousness, and Medicine."

²²⁹ Callahan, *The Role of Complementary and Alternative Medicine*.

²³⁰ Ibid.

biological existence, but in the complex way in which it unifies existence, health, and disease. And as we seek to understand, our own model will morph and become better as it incorporates the aspects of truth and wisdom present in diverse perspectives.

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