



# Personalized Lifestyle Based on Traditional Persian Medicine: A Missing Link in the Prevention and Management of Cancer

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## ABSTRACT

Cancer is the second leading cause of mortality worldwide. Unfortunately, despite appropriate and standard therapeutic approaches, they are often disappointing in long-term improving the prognosis and quality of life among patients. On the other hand, the integrated utilization of traditional and complementary medical approaches along with conventional treatments opens a hopeful horizon in front of our sights. Traditional Persian Medicine (TPM) considers the human body as a smart and intelligent organism, possessing significant capabilities to preserve the health and healing of the diseases. This trend of medicine, based on the fundamental concept of Midzaj (temperament) and every person's unique features, has demonstrated six principles to have a healthy lifestyle and emphasis on the importance of preserving health on the title of "Setteh-e-zarurieah" which has provided health for people during centuries. The evidence suggested that it is inevitable to have healthy and personalized lifestyle along with conventional treatments to achieve the good health of any person.

**Key Words:** Traditional Persian Medicine, temperament (Midzaj), personalized lifestyle, prevention, cancer, purgation therapy.

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## INTRODUCTION

Cancer is one of the common causes of mortality and morbidity worldwide [1]. The lost living years by cancer are estimated to be 169.3 million years in 2008 [2]. Cancer is the second cause of mortality worldwide [3]. According to a report by the World Health Organization (WHO), the trend is growing and it is expected to have 13 million mortalities annually up to two future decades [4]. The economic burden of cancer is significant and growing [4]. In 2012, around 14 million new cases of cancer had

emerged worldwide [4] and it is expected to have a 70% increase in the incidence rate over the next two decades [2]. In Iran, cancer is the third major cause of mortality. Annually, more than 50 thousand of Iranians die from cancer [5, 6]. The incidence age of cancer is decreasing due to the growing tendency toward the western lifestyle among the people especially in the youth [7, 8]. It is estimated that over 70 thousand new cases would emerge annually in Iran and we see the growing incidence rate as the population grow elder over the next two decades [5]. Undoubtedly, chemotherapy and radiotherapy are among the rational and conventional therapeutic approaches to

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fight against cancer. However, despite successful treatment, the efficiency of these treatments in promoting the prognosis and life quality among cancer patients is often disappointing due to the severe side effects and/or low effectiveness. Meanwhile, the resistance to conventional treatments is also a matter of problem to control most cancers [9-12].

The side effects of treatment and disease often decrease the quality of life among the patients. Some of the side effects would last for many years and bring additional costs making them give up admitting or continuing treatment [13-15].

### **Complementary and Alternative Medicine**

Complementary therapies are uncommon supportive therapies for cancer patients helping to solicit the side effects caused by other therapies and to improve lifestyle [16]. Most patients believe that Complementary and Alternative Medicine (CAM) has permanent and lasting effects and are safe in terms of possible side effects [17-19].

Utilizing these therapies is common and growing in most of the countries, in a way that many patients (e.g. 91% in the United States) use at least one type of CAM [19-22]. Higher education and age are associated with the more use of CAM. For instance, a considerable number of women with cancer, especially with higher education, use this type of medicine [23-27].

CAM, as patients suggest, can reduce the side effects of conventional treatments, control the symptoms, improve the quality of life and make to feel good, increase the longevity, relieve pain, bring physical and emotional relaxation, improve immune system, and promote the capabilities to fight against the disease [14, 23, 28-30].

CAM is cheap, easily available with fewer side effects in which, the patients have more control over their care. This medicine is noninvasive, logical, and evidence-based. If it is used simultaneously with or after the main treatment, they will contribute to more physical and mental power, symptom management, a better quality of life, and forming "integrative oncology". The systematic studies also suggested that separate utilization of each of these treatments causes significant problems and the mere use of alternative medicine is unscientific and fraudulent [10, 15, 23, 24, 31, 32].

Despite many concerns about the potential side effects of the integrated medicine, only a limited number of studies have reported the side effects and so, further studies with valid methodology are needed [17, 33, 34].

Using herbal remedies along with chemotherapy can significantly improve "Karnofsky Performance Status Score", modify the chemotherapy side effects, and enhance the response of tumor cells to the treatment [35]. Wonderfully, 20-70% of patients do not reveal their use

of CAM because they think their physician does not approve CAM. They think CAM is irrelevant to their main therapies. Oncologists in most cases are unfamiliar with the subject matter and according to their patients, they cannot help them [17, 25, 36].

Many studies have suggested the administration of empowering programs conducted for caregivers in developed countries. More participation and cooperation of physicians and other caregivers to achieve mutual understanding of the safe use of CAM along with conventional therapies is an inevitable issue [9, 16, 37, 38].

Due to the increasing prevalence of chronic and lifestyle-related diseases and the growing tendency of people toward indigenous therapies, WHO has decided to advise them to use CAM along with conventional therapies [39]. In TPM, cancer is a recognized disease with diverse treatment strategies. It should be noted that ancient medical description about cancer and proposing ways to prevent and treat it show the deep insight of TPM into this problem [40]. The integration of traditional medicine therapies with common treatments has brought hope in better control and treatment of cancer [7, 41]. In this paper, we have tried to elaborate on the perspectives of TPM in preventing and better managing of cancer, based on the fundamental concept of "Midzaj"(Temperament) and the principles of "Setteh-e-zarurieah".

### **An introduction on TPM**

TPM is a comprehensive and holistic school and is a branch of CAM. The school is one of the richest schools of traditional medicine worldwide and goes back to 8000 years B.C [40, 42-44].

TPM is based on individual differences and the concept of "Midzaj" or "Temperament". It proposes that the entire universe is comprised of "Four elements" (Arkan), each possessing its own specification and include "elemental air" with moist and hot quality, "elemental fire" with hot and dry quality, "elemental water" with cold and moist quality and "elemental soil" with cold and dry quality. Via fusion (action vs. reaction) of these elements with each other in certain amounts, a unique entity is formed, called "Midzaj" or "Temperament". The temperament of a composition (thing or living creature) has a direct relationship with the dominance of one element over the others. For instance, if the element of fire is dominant, the thing possesses hot and dry temperament and if both water and soil elements are dominant, then the thing will have cold Midzaj. Therefore, every person has a defined and unique Midzaj that determine all physical and mental features [43, 45-47]. Besides TPM, other trends of traditional medicine like Chinese medicine, Ayurvedic medicine, and Greek (Unani) medicine have emphasized the various concepts of Midzaj [48] (Table 1).

TPM is based on the “theory of Humorism”. According to this approach, after entering the body and pass the four processes of digestion, foodstuffs are turned into four liquids (fluids) with heterogeneous temperaments called “Chyme” that play a key role in forming and feeding the body organs. Four humors are Blood with moist and hot temperament, yellow bile with hot and dry temperament, phlegm with moist and cold temperament, and black bile with cold and dry temperament [46].

### **Cancer and TPM**

It is vital for a healthy body to have a qualitative and quantitative balance between these four humors. In the case of any imbalance between these humors due to external and/or internal factors, there would be a kind of abnormal humors accumulation in the body, which leads to mal-temperament that provides the conditions for various diseases like cancer [7, 40, 45-47].

Excessive accumulation of abnormal black bile (Burned black bile) in the body due to a chronic mal-temperament and disturbances in steps 3 and 4 of digestion process (vascular and tissue digestion, respectively) is the main cause of cancer [41, 49].

According to the principles of TPM, the abnormal accumulation of corrupted Chymes in an organ causes swelling. Cancer is a kind of black bile swelling that is mostly formed in soft and porous tissues and is associated with inflammation, pain, impulse, and angiogenesis [40, 50, 51]. Interestingly, novel findings also suggest more incidence of cancer in soft and porous tissues. So that breast, colorectal, and prostate cancers are respectively the most common cancers, worldwide [52].

TPM physicians believe that the long-term consumption of unhealthy and incompatible with temperament foods, frequent mental and physical stress, non-purgation of the body from waste substances, long-term insomnia, accumulation of waste products caused by chronic inactivity, and being exposed to very hot and dry weather can cause temperamental imbalance and accumulation of abnormal chymes, which result in chronic diseases such as cancer. Changing lifestyle and preserving body normal temperament can prevent the above-mentioned process. The main mission of TPM is to preserve health rather than treating diseases [7, 40, 46].

### **The Emergence of Lifestyle Medicine**

Unhealthy lifestyle is the origin of public non-communicable diseases and the reason for approximately 63 % of mortality. Cardiovascular diseases and cancer are the two main causes of mortalities worldwide. The growing prevalence of chronic diseases is directly related to the lifestyle and this has emerged the new concept of Lifestyle Medicine (LM) [53-56].

Many evidence suggests that unhealthy lifestyle including inactivity, poor diet, psychological factors, environmental

factors, smoking, and drinking alcohol are the primary key factors of pathogenesis and the emergence of lifestyle-related diseases (LRDs) [57, 58].

The growing inclination of people toward the western lifestyle, neglecting the origins of diseases, and caregivers’ ignorance of prioritizing healthy lifestyle measures have seriously threatened people’s health [59]. WHO estimates that all around the world and up to 2020, about two third of diseases will be the result of an unhealthy lifestyle [60].

Even though, about three fourth of the annual cost of healthcare in the United States is spent on lifestyle-related chronic diseases; however, health status is not in good condition. [61-63]. It is interesting to note that in countries with higher per capita of health than the advanced countries, the prevalence of chronic diseases is also higher [64].

LM is a branch of Evidence-Based Medicine (EBM) aimed to address the underlying causes of diseases associated with comprehensive changes in lifestyle to prevent and treat chronic diseases and reverse their progress [54].

In other words, LM is a well-organized plan, helping patients and their families, by taking a healthy lifestyle, to maintain and promote his/her health and along with their conventional therapies they provide themselves with self-care, prevention, and treating their chronic disease [53, 63]. The core point of different definitions of LM is the emphasis on the significant role of a healthy lifestyle in maintaining health and preventing from diseases as well as its key role in treating diseases and rehabilitation [53].

Although some people propose LM as specialty and a novel concept in the modern medicine, in fact, the coinage is not modern and is a legacy of thousand years experienced by our ancestors [53, 59]. So that, thousands of years ago ancient Greek and Chinese physicians emphasized the role of food as a drug and temperance in nutrition in maintaining health [65, 66].

Despite costly healthcare programs, they have not yet contributed to favorable outcomes. Lifestyle-related behaviors are still responsible for the great bulk of mortalities and disabilities. Therefore, along with the maintenance of public health interventions, former plans and traditional interventions in terms of lifestyle should be changed [67].

Many healthcare organizations, regardless of individual inherent and acquired differences propose standards of a healthy lifestyle for the general public [65].

To compensate for the deficiency, “Personalized Medicine” (PM) as a novel concept has been appreciated in recent years. It bases each person’s unique genomic features and proposes the best health maintenance and diagnostic and treatment measures for each individual

[47, 68]. The medical orientation of PM can be inferred from the fact that response to a drug and diseases symptoms in each person is different from the others. Personalized Lifestyle Medicine (PLM) enhances the efficiency of public health programs, which contributes to reduced costs and less heterogeneous health patterns [54, 69-72].

Unique and specific measures to maintain and promote health do not exist in Modern Personalized Medicine (MPM). However, modern technology and genomic pattern of individuals can predict the susceptibility of individuals for a certain disease. In other words, MPM mostly emphasizes on diagnosis, prognosis, and treatment rather than the prevention [73-76].

### Setteh-e-zarurieah

Undoubtedly, from thousand years ago, TPM possessed a comprehensive and holistic orientation based on personalized medicine approach. However, its origin sometimes is attributed to Unani medicine and Hippocrates [74, 77, 78].

According to this approach, every person has his own unique temperament that comprises all of his/her physical and mental features. Thus, one disease can be varied in terms of symptoms among different people, according to their temperament. Therefore, in patients with a similar disease, regarding the characteristics of each person's temperament, different medications and treating measures will be prescribed because the optimal health status of each person is different from others. Hence, if the temperament is identified we can predict health-related behaviors, predisposing factors, the prognosis of different diseases, and choosing the best measure for each person [47].

Throughout the centuries, TPM has utilized "the six principles of maintaining and promoting health" to prevent and treat diseases. These are called "Hefz-o-ssehah" or "Setteh-e-Zarurieah" that are as follows:

1. Evacuation and Retention
2. Food and Drinks
3. Air (Hava)/( environmental factors)
4. Psychological Activity (Araz-e-Nafsani)
5. Physical Movement (exercise) and Repose
6. Sleep and Wakefulness

Disease or mal-temperament happens following an imbalance temperament. According to TPM "mal-temperament" is a disturbance in chemical interactions and physiology. Therefore, therapeutic measures are taken to restore the individual's temperamental balance. To achieve the treatment goals and restore health, it is vital to follow "Hefz-o-ssehah" with personalized medicine approach in addition to the prescription of drugs [7, 46].

Implementing "Setteh-e-Sarurieah" is known as "regimental therapy" (Ilaj-Bil-Tadbir) in TPM. "Tadbir" (Therapy), means having changes in "Setteh-e-Zarurieah" principles and modifications in the lifestyle. Its most important part is "Diet Therapy"(Ilaj-Bil-Ghaza). Many centuries ago, Greek Physicians had adopted this therapy to prevent and treat diseases [46, 79].

In TPM, the treatment process initiates with non-pharmaceutical therapies. At first, it tries to change wrong habits and encourages the patient to adopt a healthy lifestyle. It is worth mentioning that modification of temperament without modification in lifestyle is nonsense [46, 51].

In the case of corrupted chymes accumulation, it is necessary to purge the body before temperament modification because the modification is not possible without purgation. In Ayurvedic Medicine "purgation therapy" is a treatment plan for almost all types of diseases and it is prescribed before any palliative treatment or temperament modification [7, 46, 80].

### The principles of purgation therapy in TPM

#### • Evacuation and retention

"Evacuation and retention" is a principle of "Setteh-e-Zarurieah" in TPM. "Retention" means to save and keep needed materials in the body in its appropriate level and "evacuation" means to purge and dispose of anything that qualitatively or quantitatively harms the body. Urination and defecation, exhalation, sweating, and menstrual bleeding are among the most important ways of the evacuation of body waste products. Any long-term disturbance in one of the processes leads to the accumulation of waste products in the body that in turn cause various diseases and especially chronic diseases. In these cases, the physician prescribes the best treatment with fewer side effects and makes artificial evacuation [7, 51, 81].

The purgation processes in different medicines such as Ayurvedic medicine, Chinese medicine, and Naturopathic medicine are clearly demonstrated. Detoxification is the core subject of Naturopathic medicine as it supposes that the accumulation of toxic materials is the cause of many diseases [82].

To facilitate the excretion of waste substances, it is necessary to prescribe some pharmaceutical and non-pharmaceutical therapies according to the patient's condition. In order to have a good circulation of biologic elements and their easy access to organs and intra-tissues spaces, it is vital that they have appropriate consistency and physical conditions [81, 83, 84].

The process through which useful substances in the body become more efficient and body waste products become more excreted is called "Maturation"(Nozj). In other words, Nozj means the complete digestion in which the

elements acquire appropriate consistency to be used in the body. In fact, digestion is an example of Nozj process. In case of any disturbance in each level of digestion, it results in the accumulation of waste products especially interstitial spaces that finally cause diseases. [81, 83, 84]

Ancient physicians had emphasized the maturation process before purgation therapy as they believed that excretion of waste products before they reach to good consistency exacerbates the disease. The Maturing drugs (Monzej drugs) are those medications that facilitate Nozj process. In TPM, three kinds of Monzej drugs including yellow bile, phlegm, and black bile were used to excrete corrupted chymes from the body. Regarding the fact that body waste materials have different consistencies and physical conditions, the Monzej drug and the time for the maturation process are varied according to each chyme. The most diluted chyme in its consistency is yellow bile and the most concentrated chyme is black bile. The minimum time period for the completion of the maturation process in yellow bile is three days and for phlegm is nine days and for black bile, it is 15 days. Blood chyme does not need maturation unless it is mixed with other corrupted chymes [81, 83, 84] (Tables 2, 3, 4). The appeared clinical symptoms in patients suggest the completion of the maturation process, among them the most important symptoms are: wide cardiac pulse and change in urine color and quality. [81, 83].

After the completion of maturation and the appearance of its symptoms, some drugs called “purgatives” are used to facilitate the excretion of waste substances. *Cassia Fistula L.* is a laxative, safe, and effective purgative that is used for centuries [83, 84].

This plant has a soft and human temperament friendly nature and is extensively used even among pregnant women and children and it is abundantly utilized as a purgative drug. It facilitates the excretion process if mixed with other corrupted chymes purgatives [85, 86] (Table 5).

Ayurvedic Panchakarma (biopurification) is a systematic therapeutic process in Ayurvedic medicine, which is equivalent to “Ilaj-Bil-Tadbir” in TPM. In this therapeutic process, health maintenance, taking care of patient and temperament modification happens through changes in lifestyle and adopting a healthy lifestyle especially via regimen and purgation therapies [46].

Panchakarma (biopurification) and more precisely, Virechana Karma (Purgation therapy) as a part of the Panchakarma process, plays a key role in the elimination of corrupted chymes and significantly enhances life quality among the patients. The treatment has been widely used among metabolic disorders and often results in satisfactory outcomes [87-89].

During purgation therapy, following the increase in the activity of the digesting system and mucosal secretion, waste and toxic substances are excreted from the body and body channels are cleaned and blood and lymph circulation get better. After purgation therapy, digestion and metabolism processes are improved and the absorption of nutritional elements, drugs, and ions’ transfer get better. Consequently, the response to treatments that are prescribed after purgation therapy, is facilitated. The clinical symptoms for the process are better sleeping, better appetite, and digestion, feeling well, and improvement in the quality of life [88, 89].

Many toxic substances come from food products. These substances are fat-soluble and have a high half-life and they become accumulated as the age grows. The ways to excrete fat-soluble toxic materials are limited and, as time goes on, their accumulation causes neurological disorders, immune system and endocrine disturbances, and liver damage. They also help to develop many cancers with fatty-tissue related origins like breast and prostate cancers [82, 90-92].

Detoxification methods were common for thousands of years in different cultures. Multiple studies revealed physical and mental health improvement in patients following the detoxification process. Although evidence is few, it should be noted that the lack of evidence on the effective process does not necessarily suggest its lack of efficacy. Many clinical caregivers are unaware of the disastrous consequences of the accumulation of toxic materials in the body and hence, they should be informed as much as possible. It is predicted that similar to other people, medical society gives more attention to the field of environmental health issues. Therefore, the subject matter of clinical detoxification is more valuable than before [82, 90-92].

#### • Purgation therapy of cancer patients in TPM

At first, black bile chyme should be excreted from the body by purgative drugs. Razi (Razez 865-925 AD) believed that black bile purgative drugs should be prescribed at least 10 times a week in a frequent manner. He concluded that black bile chyme is hard to be excreted. Monzej drugs should be given every day before breakfast and sleeping at nights. After appearing maturation symptoms and changing the urine color the purgative drug should be given. [41, 81]

Purgation therapy should be continued until the complete excretion of waste substances. Moreover, it is necessary to have changes in the patient's lifestyle to prevent the production and accumulation of waste products [41, 81].

They believed that the intelligent nature of the human body provides physiological ways to excrete waste substances to prevent the excessive accumulation of waste products and corrupted chymes. For instance, bleeding

from varicose veins of the hemorrhoid is one way of excretion of burned chymes from a patient with black bile mal-temperament. Therefore, when bleeding is stopped it can result in the accumulation of waste substances and exacerbation of disease [40].

Accordingly and in order to excrete corrupted chymes with fewer side effects, before purgation therapy and the prescription of any Monzej or purgative drug, we should be assured that the patients do not have constipation and their excretion mechanisms act normally. Moreover, in female patients, it is important that before any treatment we prescribe menstrual inducing drugs [41, 81].

Galen in his book titled "*Purgative Drugs*" describes that treating malignant lesions is only possible through purgative therapy. A composition of *Cuscuta-epithymum Murr* (17.84 gr) and *Cheese Whey* to the purgation of black bile chyme was prescribed by ancient Greek and Iranian physicians. Bloodletting is also used for more purgation therapy along with Monzej and purgative drugs [40, 41].

More recent investigations have illustrated that intestinal nutrition with supplementary cheese whey (prepared from cow milk) in cancer patients undergoing chemotherapy can improve their immune system and nutritional status. Cheese whey provides required cysteine for more production of glutathione in lymphocytes in the revival of tissue glutathione. In this way, it plays a role in improving cellular and humoral immunity. Epidemiological and empirical studies have shown that cheese whey has antioxidant and antitumor properties and has inhibitory effects on the development of different tumors by reviving tissue glutathione. This nontoxic nutritional intervention, not relevant to the conventional chemotherapies, would make researchers and oncologist hopeful about its clinical potentials [93-100].

Despite the lack of enough evidence, investigations have revealed that flavonoids and other compounds in *Cuscuta spp.* (*Dodder*) have different biological properties including cytotoxic, antioxidant, antiproliferative, anti-inflammatory and anti-cancer. The most common type of *Cuscuta spp.* is *Cuscuta-epithymum Murr* plant that is widely used in various therapies of traditional medicine [5, 101-103].

#### **The principles of regimen therapy in TPM (Tadbir-Bil-Ghiza)**

Regimen therapy is greatly important in TPM. In fact, most of the TPM success goes back to proper regimen therapy. The ancient physicians believed that to excrete waste products it is not necessary to start with purgative therapy, because in most cases treatment goals can be achieved by modifying the lifestyle (especially diet) [7, 81].

On the priority of regimen therapy, Razi says: "If you can treat with food never use the drug and as long as you can treat with single drug do not use combined drugs". In other words, away from external Monzej drugs, good blood circulation, appropriate tissue perfusion, and producing appropriate blood, which are achievable through diet change, are important factors on the effectiveness of the maturation process [79, 83, 104].

Ancient Greek physicians assigned limitations and/or changes in patient's diet, through the changes in the quality and quantity of their consumed food, before pharmacotherapy [46].

According to the principle of regimen therapy, it is necessary that the patient eat tender (*Latif*), nutritious (*Kasirol-Ghiza*), and righteous (*Saleh Chyme*). It means that these types of foods get easily digested and they are nutritive enough and their digestion produce blood with good consistency (*Saleh blood*). Honey egg yolk, here, is a good example. This makes the possible activation of the whole body (all forces of the body) to defeat the disease and not to be involved in the digestion process. Because digesting heavy food needs energy and this energy consumption worsens the disease [7, 40, 83, 84].

The principle of regimen therapy in TPM is to avoid food and eat little. A treatment method, here, is Tadbir-e-Latif, which means that in some cases of diseases, by considering the patient's condition, the patient should receive less food as much as possible. Even, in some cases, the patient must be avoided to receive food so that all his body focuses on defeating the disease. However, it should be notified that eating little or avoiding food should be in its borders and should not contribute to the degradation of the patient or worsen the disease [46, 83, 84].

Fasting therapy is a naturopathic therapeutic method that is considered as a valid therapeutic approach to treat acute and chronic diseases in traditional medicine, worldwide [105].

Studies have demonstrated that utilizing fasting therapy along with chemotherapy can significantly reduce the side effects of chemotherapy, enhance anti-tumor effects of drugs, prevent tumor progression, and therefore make its size smaller with less metastasis, and consequently, significantly improves prognosis [105].

#### **TPM regimen therapies for cancer patients**

In most cases, the physician can help body intelligent system in producing Saleh chymes, lowering down the accumulation of corrupted chymes and fight against diseases without prescribing any drugs. Accordingly, cancer patients are advised to use tender and Saleh chymes producing foods such as honey egg yolk, fresh cow milk, sweet almond oil, sheep meat extract, and chicken soup. Moreover, to reduce the acuteness of

disease-producing chyme(s), the patients are suggested to eat foods with moist temperaments such as cheese whey, lettuce, Malva (*Malva sylvestris*), pumpkin, and *Echium amoenum* Fish C.A. Mey. The most proper food for these patients is barley extract or beer. The patients are suggested to avoid using food with hot and dry temperament, salty foods, spicy foods, and sour foods. Avoiding heavy foods, and foods, which concentrate blood like raw garlic and onion, old cheese, pepper, and hot spice, cow meat, salted meats, eggplant, and lentils is necessary [7, 40, 41].

#### **Air (Environmental factors affecting Health)**

Air affects all physical and mental actions and processes (all physiological functions). Therefore, the role of healthy air and environment in health measures is highlighted in TPM. Air helps to achieve and maintain health if it is pure and not intermingled with a substance, which is external and incompatible with body temperament. Sometimes it is possible that unpolluted air becomes qualitatively imbalanced due to an abnormal increase in heat, coldness, moisture, or dryness [79, 106]. Healthy and temperament friendly air enhances essence heat (vital energy) and modifies body temperament. In contrary, polluted and imbalanced air corrupts Chymes, produces impure blood, degrades essence heat, disturbs the temperamental balance and moves body temperaments toward coldness and dryness. It causes some clinical manifestations including long-lasting tiredness, mood changes and sleep disorders [79, 106, 107].

According to the principles of TPM, each season has its own temperament and by changing the seasons, the climate is normally changed. Spring has a mild (moderate) temperament, summer has “hot and dry” temperament, autumn has “cold and dry” temperament and finally, winter has “wet and cold” temperament. Therefore, ancient physicians emphasized the fact that in health preserving measures and medical prescriptions, one should consider each person’s temperament, living region, and environmental and climate situations [79, 106].

Avicenna believed that healthy air is the base of the vital energy of human life. In terms of climate and environmental conditions and their impact on human health, his thought is quite similar to the modern findings. He believed that polluted air can leave short-term and long-term effects on health. Cardiovascular diseases are among prevalent diseases coming from exposure to polluted air. This issue is also confirmed by the more recent epidemiological findings [106, 107].

Short and long-term exposure to polluted air enhances the occurrence risk and progression of diseases like cardiovascular and pulmonary disorders, neuropsychiatric

complaints, reproductive system disorders, genetic damages, and chronic diseases like cancer. Several studies revealed the direct relationship between exposure to unhealthy air and increase in mortality and morbidity rates and a decrease in life expectancy. According to the reports by WHO, seven million people annually die from air pollution worldwide [79, 106-108].

People with dry base temperament are more affected by climate changes than people with wet temperaments. Therefore, cancer patients with “hot and dry” and “cold and dry” temperaments are advised to avoid polluted, very hot/cold weather and live in mild climate settings as much as possible [79].

It is recommended to use foods with the antidote and aromatic properties such as raw garlic, raw onion, and apple. It is also suggested to use cardiovascular and mental function boosting foods and avoid emotional excitements such as getting angry [107].

#### **Araz-e-Nafsani (psychological activity)**

Human temperament is deeply affected by his/her mental status, therefore to focus on mental wellbeing is a key principle of “Setteh-e-Zarurieah” in TPM [79, 81].

This trend of medicine puts emphasis on the spiritual aspects of the human being. Accordingly, the relationship between humans and their creator is a key factor in preserving health and treating diseases. Here, the person is encouraged to strengthen this relationship with God. The findings suggest that religious beliefs cause better physical and mental health and prolong lifetime [7, 51, 109].

Psychoneuroimmunological studies have revealed the probable direct effect of beliefs, emotions, and thoughts on the performance of neuro-endocrinal and nervous systems and their key role in fighting against disease and improving prognosis. Anxiety, stress, and depression may cause disturbances in some physiological pathways and degrade immune system that in turn results in tumor formation and progression. Psychological interventions and social supports, here to say, can improve the treatment and control of the disease. In other words, improving mental status can enhance immune cells’ defense mechanism, which affects the progression of many chronic diseases [79, 109, 110].

Through the identification of temperaments and psychological conditions of individuals, health care providers can help them to achieve the desired mental state, psychological wellbeing and improve emotions. People with basic dry temperament are more disturbed by emotional turmoil. Therefore, cancer patients with “hot and dry” and “cold and dry” temperaments are advised to avoid emotional excitements as much as possible. The patient is strongly recommended not to suppress his/her emotions and excitements and confabulate with his/her

lover, compassionate relatives, and close friends [7, 51, 106].

### Physical exercise and repose

Avicenna in his book called "the Canon of Medicine" calls respectively physical exercise, eating and drinking, and sleeping to be the most important measures in preserving health. The amount and type of exercise are varied from a person to another and is demonstrated according to his/her temperament. Any imbalance can cause different diseases [7, 51, 111].

Constant exercise in young age can lower down the risk of breast cancer in the menopause phase. It reminds the importance of a healthy and active lifestyle for young women and caregivers. Physical exercise for 30 to 45 minutes in most days of the week is necessary to lower down the risk of cancer. There is multiple evidence on the efficacy of doing exercise during and after cancer treatment. It improves the quality of life among all cancer patients. [112-116].

The best way to excrete waste products, caused by food maturation and digestion that are not excreted through urine or stool and are gradually accumulated in the body is by doing exercise. The moderate and temperament-related physical activity enhances natural heat (Hararat-e-Gharizi) matures and dilutes waste substances and excretes them by sweating. During exercise, if the breathing and sweating go excessive, the physical activity must be stopped. On the contrary, inactivity and a long-term resting, due to the accumulation of toxic and waste substances, moves body temperaments toward coldness and congestion. From the perspective of TPM, the best time to do exercise is after the completion of digestion of food in the stomach. Exercising at noon in spring, in the morning in summer and at the end of the day in winter is good. Cancer patients with base dry temperaments (especially with hot and dry temperament) are advised to avoid heavy and boring exercises [7, 51, 111].

### Sleep and Wakefulness

To make a balance between sleeping and wakefulness in preserving health and treating disease is a matter of importance. The sleeping time period for each person differs from the another based on temperament and climate. An adequate, timely, and compatible with temperament sleep, improves all physiological processes such as digestion, metabolism, and toxins disposal. It also causes mental and psychological relaxation and enhances all physical capability. On the contrary, excessive night wakefulness causes digestion disturbances, burned chymes, waste of body moistures, and increase in dryness that in turn results in different diseases [7, 51, 106, 111].

Night sleep causes the secretion of melatonin during sleep time. Melatonin adjusts circadian rhythm, facilitates sleeping, and by improving immune system function it

prevents tumor formation and development. There is an independent association between sleeping, melatonin and the immune system. Night waking inhibits the secretion of melatonin, suppresses the immune system and increases the amount of cancer stimulating cytokines that exposes the person at risk of developing a variety of cancers. Some studies have suggested the association between short night sleep time and high risk of breast cancer. Managing sleep disorders has positive effects on the treatment outcome among cancer patients because tiredness and mood fluctuations decrease the quality of life among patients and their cooperation to follow treatment and consequently increase the rate of mortality [117-120].

According to TPM, the best time of sleeping is from 10 pm to dawn. The patients are advised to avoid night waking and interrupted sleep. People with base dry temperament (especially hot and dry temperament) are more disturbed from sleep disorders. Therefore, the cancer patients in this temperament are advised to take care of their sleeping and take a nap [7, 51, 106, 111].

### Future outlook

The fact that "lifestyle is closely associated with the pathogenesis of chronic diseases" (e.g. cancers) is a completely clear issue. Controlled clinical trials have found that comprehensive changes in lifestyle, by their own, besides they prevent chronic diseases and LRDs, often can even slow down their progression or even stop or reverse them.

The limitations and costs facing modern medicine are highlighted exactly when we talk about the role of comprehensive changes in lifestyle to prevent diseases and improve the treatments of chronic diseases. Regarding the existing unawareness of diseases, basic causes and the neglect on behalf of caregivers in prioritizing healthy lifestyle, peoples' health has been seriously threatened. To achieve proper health, it is probably the time to implement Hippocrates' axioms.

By accurate understanding of the principles of preserving health and treating diseases, we can conclude that the human body is a smart and intelligent system that possesses significant capabilities in maintaining health and healing diseases. TPM avoids the prescription of any drug as possible as it can and lets the body itself to fight against the disease. At first, it tries to provide the patient with some suggestions to change his/her wrong habits and diet measures by considering his/her unique status. Only in the case that the treatment would not achieve through lifestyle change (following "Setteh-e-Zarurieah" rules), it prescribes the needed drugs. This kind of medicine is not merely to increase the survival rate but to increase our joy of life.



Although one cannot benefit from changing lifestyle to treat all diseases, the role of traditional and complementary medicines in lowering down the risk factors (preventing) of diseases and treating them in association with other conventional treatments is completely clear. The attitudes toward medicine should be changed. It should be noted that prescribing drugs is not the only solution.

Despite the attitudes of society on the key role of a healthy lifestyle in preserving health and promoting the quality of life, the main problem here is that most of the patients do not feel the need to change their lifestyle.

On the other hand, some caregivers believe that “patients do not change, Do not waste your time to consult with patients; it is better to use medications”. But when patients adopt a healthy lifestyle, they can lessen the

number of their medications under the supervision of their physician or even stop them. To solve health problems, the devotion on behalf of both patients and physicians are demanding. Therefore, it seems vital to train society and health professionals about an effective and evidence-based healthy lifestyle.

Using the potentialities of complementary and traditional medicine along with other common types of medicine is a connecting part of clinical medicine and public health. It is time to endorse indigenous and personalized lifestyle medicines.

It is predicted that the tendency toward an individualistic healthy lifestyle and using the capabilities of traditional, indigenous, and complementary medicines will be the highlighted future fields of medicine.

**Table 1. Different temperaments based on dominant element(s)**

|          | Element(s) (Arkan)<br>Temperament | Element(s) portion (Arkan) |     |       |      |
|----------|-----------------------------------|----------------------------|-----|-------|------|
|          |                                   | Fire                       | Air | Water | Soil |
| Singular | Hot                               | **                         | **  |       |      |
|          | Cold                              |                            |     | **    | **   |
|          | Dry                               | **                         |     |       | **   |
|          | Moist                             |                            | **  | **    |      |
| Compound | Hot and Dry                       | **                         |     |       |      |
|          | Hot and moist                     |                            | **  |       |      |
|          | Cold and moist                    |                            |     | **    |      |
|          | Cold and dry                      |                            |     |       | **   |

**Table 2. Herbs used in yellow bile Monzej composition in TPM**

| Scientific name             | Traditional Iranian name | Medicinal part used | Temperament           | Proportion (deal) |
|-----------------------------|--------------------------|---------------------|-----------------------|-------------------|
| <i>Cordia myxa</i> L.       | debgh                    | Fruit               | Moderate and moderate | 16 unit*          |
| <i>Rosa damascena</i> Mill. | ward                     | Flower              | Cold and dry          | 9 unit            |
| <i>Cichorium intybus</i> L. | hendeba                  | Seed                | Cold and dry          | 9 unit            |
| <i>Viola odorata</i> L.     | banafsaj                 | Aerial parts        | Cold and moist        | 9 unit            |
| <i>Prunus domestica</i> L.  | ejjas                    | Fruit               | Cold and moist        | 8 unit            |

\*: The term "unit" here is equivalent to 1.0042 grams, from the 10<sup>th</sup> to the 12<sup>th</sup> centuries AH with the term "Mashe" it was expressed, that is an Arabic word.

**Table 3. Herbs used in Black bile Monzej composition in TPM**

| Scientific name                      | Traditional Iranian name | Medicinal part used | Temperament           | Proportion (deal) |
|--------------------------------------|--------------------------|---------------------|-----------------------|-------------------|
| <i>Ziziphus jujuba</i> Mill.         | onnab                    | Rhizome             | Cold and moderate     | 15 unit           |
| <i>Cordia myxa</i> L.                | debgh                    | Fruit               | Moderate and moist    | 10 unit           |
| <i>Melissa officinalis</i> L.        | badranjbuyeh             | Leaves              | Hot and dry           | 7 unit            |
| <i>Lavandula angustifolia</i> Mill.  | ostokhoddus              | Aerial parts        | Hot and dry           | 7 unit            |
| <i>Adiantum capillus-veneris</i> L.  | par-e-siavashan          | Leaves              | Moderate and moderate | 7 unit            |
| <i>Foeniculum vulgare</i> Mill.      | razyanaj                 | Seed                | Hot and dry           | 7 unit            |
| <i>Echium amoenum</i> Fish C.A. Mey. | lesan al-ssour           | Flower              | Hot and moist         | 7 unit            |
| <i>Fumaria officinalis</i> L.        | shahtaraj                | Aerial parts        | Cold and moderate     | 7 unit            |
| <i>Glycyrrhiza glabra</i> L.         | sous                     | Rhizome             | Hot and dry           | 7 unit            |

**Table 4. Herbs used in phlegm Monzej composition in TPM**

| Scientific name                     | Traditional Iranian name | Medicinal part used | Temperament           | Proportion (deal) |
|-------------------------------------|--------------------------|---------------------|-----------------------|-------------------|
| <i>Foeniculum vulgare</i> Mill.     | razyanaj                 | Seed                | Hot and dry           | 9 unit            |
| <i>Pimpinella anisum</i> L.         | anisun                   | Seed                | Hot and dry           | 9 unit            |
| <i>Melissa officinalis</i> L.       | badranjbuyeh             | Leaves              | Hot and dry           | 9 unit            |
| <i>Adiantum capillus-veneris</i> L. | par-e-siavashan          | Leaves              | Moderate and moderate | 9 unit            |
| <i>Ficus carica</i> L.              | teen                     | Fruit               | Hot and moist         | 9 unit            |

**Table 5. Types of "Purgative" in TPM**

| Purgative types       | Composition  |
|-----------------------|--|
| Black bile purgative  | <i>Cassia fistula</i> L., <i>Polypodium vulgare</i> L., <i>Cichorium intybus</i> L., <i>Fumaria officinalis</i> L., <i>Salix alba</i> L. |
| yellow bile purgative | <i>Cassia fistula</i> L., <i>Tamarindus indica</i> L.  |
| Phlegm purgative      | <i>Cassia fistula</i> L., <i>Operculina turpethum</i> L.   |

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