Application of artificial intelligence in the field of Traditional Chinese Medicine health preservation in the era of big data

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Abstract. TCM means Traditional Chinese Medicine. TCM Museums are becoming more and more common with people's increasing demand for health concepts. However, because there is no unified industry standard and the quality of projects is uneven, potential customers in need are discouraged. With the rapid development of information technology, we are in an era of big data filled with a large amount of information. In the context of the big data era, artificial intelligence, as a cutting-edge technology, complements each other, and its integrated application is widely used in many industry fields. This paper discusses the application of artificial intelligence in the field of TCM health preservation in the era of big data from three aspects: health monitoring, personalized recommendation of TCM health preservation scheme and publicity of TCM health preservation knowledge. From the discussion of these three aspects, we can explore more possibilities of integrating big data and artificial intelligence into TCM health preservation, which can not only help TCM Museums improve service quality, but also effectively realize people's personalized self-health management.

Keywords: Big Data, Artificial Intelligence, Traditional Chinese Medicine Health Preservation.

1. Introduction

In the era of big data, artificial intelligence, as the frontier of science and technology, complements each other, and the integration of the two is widely used in many industries [1]. The information is collected and analyzed through big data, and the data is accurate and effective. Artificial intelligence further extracts valuable information and generates targeted solutions through model training and other operations on the processed information. TCM means Traditional Chinese medicine. With the improvement of people's health concept, TCM health preservation is widely concerned, and the integration of big data and artificial intelligence into the field of TCM health preservation is the future development trend of TCM health preservation.

Since ancient times, keeping in good health means maintaining life, which can enhance human health and prevent diseases, thus achieving the effect of prolonging life. The significance of keeping in good health is very extensive, which not only involves the external care of physical function, but also includes the spiritual adjustment of cultivating the mind. The traditional Chinese medicine health preservation is guided by the theory of traditional Chinese medicine following the law of yin and yang and five elements, maintaining the five internal organs, actively taking preventive measures in all aspects of daily life, and adopting a healthy lifestyle to enhance physical fitness and prevent diseases [2].

Among them, the individualized development of TCM health preservation can not be separated from the concept of physical health care. Thousands of years ago, "HuangdiNeijing" put forward the theory of physical health. Constitution of traditional Chinese medicine refers to the physiological and psychological characteristics formed in the process of human growth and development under the joint influence of the previous day and the day after tomorrow. These physical characteristics are usually influenced by natural environment and social environment, involving living conditions, diet composition, geographical environment, seasonal changes and so on. Modern Chinese medicine divides the domestic population into nine physique types, namely, peaceful physique, qi deficiency physique, yang deficiency physique, yin deficiency physique, phlegm.dampness physique, damp heat constitution's physique, intrinsic physique, blood stasis physique and qi stagnation physique. Therefore, this paper discusses the application of artificial intelligence in the field of TCM health preservation in the era of big data from three aspects: health monitoring, personalized recommendation of TCM health preservation scheme and publicity of healthcare knowledge based on the concept of physical health care that varies from time to time, from place to place and from person to person.

2. Health monitoring

Individual's physique is influenced by many factors in the internal and external environment.such as environment, spirit, nutrition, exercise, disease and so on[3]. In the era of big data, a database is established according to the idea of keeping in good health according to time, place and person.and all kinds of information of different individuals, such as gender, age, birthplace, long-term living place, eating habits, living habits, interpersonal relationships, adaptability to climate, etc., are mined and analyzed in combination with local geographical factors, environmental climate conditions, time changes and other information to find out the relevance of all kinds of information, and then the correlation analysis is carried out through natural language processing technology. Train the characteristic information of different constitutions, such as: most people with qi stagnation constitution are thin, generally introverted, depressed, easily nervous. sentimental and often depressed, which is called "qi deficiency" by Chinese medicine. According to these information, combined with individual personalized information, individuals are classified into physique categories, such as damp heat constitution, Qi deficiency physique, etc. Considering that some people belong to two or even three kinds of mixed physique, the above information is accurately analyzed and classified through algorithms, and the above information is stored in the database and personal physique information files are established. And keep dynamic monitoring, do a good job of information update and statistics, to ensure the real-time display of individual physical condition.

By monitoring the environment around the individual and combining with each person's physical information file, artificial intelligence gives hints to individuals with different physical fitness from the aspects of health habits in life. For example, the weather warms up in spring, and in winter, most people live in seclusion, exercise less, and prefer rich and delicious food, so a lot of fat and toxins are accumulated in their bodies. There is an old saying: "A thousand dollars can't buy spring to drain", which means "it's just the right time to eliminate fat and detoxify in spring"At this time, artificial intelligence can prompt individuals to prepare ingredients such as yogurt and apples for fat elimination and detoxification in spring, which are mild and beneficial and have good detoxification effect, and specify the best time for drinking in the morning, that is, the working hours of stomach meridian are from 7: 00 to 9: 00. At the same time, when the liver qi is strong in spring, the liver qi will affect the spleen, so it is difficult to have spleen and stomach weakness in spring. Artificial intelligence analyzes the performance and efficacy of different ingredients through algorithms, and recommends sweet and warm products such as jujube, yam and crispy rice in combination with environmental factors such as temperature and individual information to avoid sour and cold irritating foods. Remind individuals to fall asleep before eleven o'clock in the evening when the gallbladder meridian works.

3. Personalized recommendation of TCM health preservation

There are many types of specific health care programs, and each type follows its corresponding health care principles, such as coordination of yin and yang, adaptation to nature diet recuperation, cautious living, etc., so that health care activities have rules to follow. The application of big data and artificial intelligence in it is analyzed from four aspects: physical therapy with Chinese characteristics, exercise health, diet therapy health and cream health.

3.1. Traditional Chinese medicine characteristic physical therapy

Acupuncture, cupping and massage are the characteristic treatments of Chinese medicine. which are closely related to the meridians and acupoints of the human body and are also the characteristic services of various TCM Museums. However, because there is no unified industry standard in the TCM Museum, cupping burns, moxibustion burns and other accidents are endless. In view of this situation, there are already intelligent moxibustion robots in the market, which use artificial intelligence technology to realize intelligent services such as voice interaction, intelligent find holes, intelligent ignition, intelligent switch, temperature control, visual health scheme, etc., and through high-speed and high-precision motion control technology, accurately reproduce the professional techniques of moxibustion masters to provide users with stable rotary moxibustion, reciprocating moxibustion, bird pecking moxibustion and hovering moxibustion.so as to reduce the labor cost of professional and technical personnel. In addition, an app with lower cost for users than robots is also a good choice. Xunai app realizes the detection of human body parts through image recognition, and combines with AR to identify the related acupoints of various parts of the human body. In addition, it provides three service modules: part acupoint identification, acupoint inquiry and disease solution. The user's body data will be customized through big data, and the three-dimensional model of the user will be generated by machine learning, which is convenient for users to monitor their own body data; It realizes human-computer interaction with users through deep learning technologies such as speech recognition and NLP (Natural Language Processing), including machine initial consultation. nutrition monitoring, and distributed data storage in block domain, which can facilitate users to manage their own health.

3.2. Exercise health preservation

Exercise health care also plays an important role in the field of TCM health preservation, and the traditional types of work are also very rich, mainly including construction, static work, dynamic and static combined work and so on. For example, dynamic exercises include Taijiquan, Baduanjin, Yijinjing, Wuqinxi, health-care exercises, static exercises include relaxation exercises internal cultivation exercises, strength exercises, Qigong exercises, Qi-qi exercises, etc., and dynamic and static exercises include empty exercises, physical and mental piles, etc. Each skill has its own targeted efficacy, such as Baduanjin, which is widely circulated as a fitness skill to regulate the qi and blood of viscera, restore metabolic function and strengthen the body. The eight movements of Baduanjin just correspond to the internal organs. For example, the third type of regulating the spleen and stomach requires a single lift to regulate the spleen and stomach,replenish qi and nourish qi, and achieve the effect of invigorating blood. At the same time, when practicing, give priority to abdominal breathing, sink into the abdomen, breathe deeply and evenly and practice regularly. However, it is difficult for many self-learners to follow the teaching video to make the movements standard. Therefore, it can help beginners to master the mystery as soon as possible by modeling and analyzing the standard movement posture combined with the real individual posture for intelligent guidance and then reflecting the movement effect in real time by monitoring the individual breathing and other data. After exercise, give timely precautions, such as taking a bath and eating for 30 to 60 minutes, to avoid moisture entering the body or gastrointestinal dysfunction, vomiting, indigestion and so on.

3.3. Diet therapy of TCM

Traditional Chinese medicine theory emphasizes "homology of medicine and food", and holds that food and medicine come from the same source, both of which belong to natural products. Food and medicine have the same performance, and many foods are used as medicine. According to the principle of keeping in good health in traditional Chinese medicine, different diets should be prescribed according to different people's constitutions, diseases, ages and special groups[4]. Fortunately, diet therapy has accumulated a large number of prescriptions, which can be systematized and standardized through data mining and classification. Then it is recommended by artificial intelligence algorithm according to the individual's physique information file combined with his personalized needs. People with qi stagnation should eat more foods with the function of soothing the liver and relieving depression, such as day lily, kelp, oranges, hawthorn and other foods, and avoid spicy, coffee, strong tea and other stimulants.

3.4. TCM cream formula

Traditional Chinese medicine ointment has the characteristics of being tailored to people and convenient to take, and has become the first item in many TCM Museums, with the effects of improving physical fitness and regulating some chronic diseases. Medicinal materials that tonify qi and blood and sweeten the mouth are often added to the ointment to improve the taste and make it convenient for people who don't like Chinese medicine to take. Therefore, its wide spread has produced many cases of ointment. Not only can we establish a complete knowledge map of ointment, but also use natural language technology to extract knowledge and analyze correlation to find the formula that needs to be used. We can also combine risk analysis and usability analysis with algorithms to assist professionals in developing new ointment [4].

4. Publicity and popularization of TCM health preservation knowledge

In the publicity and popularization of health knowledge, artificial intelligence can recommend health knowledge to individual needs in combination with individual real-time physique information files and seasons and hours. For example, in dog days, many people will choose to sunbathe their backs. Therefore, while popularizing the advantages of sunbathing in dog days, we can combine the geographical environment and climate temperature around individuals to screen out a position that will not burn their backs and is suitable for sunshine, and remind them of relevant reactions and precautions. Under normal circumstances, it is recommended to sunbathe in the morning, while individuals with yin deficiency and restless sleep are recommended to adjust to the sun after 5 pm.

5. Conclusion

Big data and artificial intelligence technology have brought opportunities and challenges to the development of TCM health preservation. By monitoring and analyzing individual health status, personalized health care programs are recommended, which will help people to adopt a healthy lifestyle for their own health management. At present, the intelligent development of TCM health preservation needs the support of its information standardization. In data analysis, nonstandard terminology will make it difficult to clean data, and unstructured data will make it difficult to analyze data. Therefore, nonstandard information is a problem that needs to be further studied.

At present, the emergence of TCM health preservation conditioning model has shown that people are not far from TCM health preservation intelligence. The big model of TCM health preservation and conditioning is a sub-model of Qihuang's big model, which is an advanced model in China. By inputting symptoms and signs.such as fear of cold, a series of multi-dimensional health care programs can be output. Specifically, the model pre-training based on the knowledge map of structured data, then supervised and fine-tuned, and finally a large model is formed by using the reward model-reinforcement learning mechanism.

To sum up, the integrated application of big data and artificial intelligence has injected new vitality into TCM health preservation. Strengthening the establishment of standardization of TCM health

information, unifying the industry standards of TCM health preservation and improving the accuracy of the results are the only way for TCM health preservation to move towards intelligence.

References

[1]   Chen Wenjing. Application of artificial intelligence in the era of big data (J). Wireless Internet Technology,2022,(4):74-75.

[2]   Yu Xiang. General situation of TCM health preservation [J]. China Folk Therapy.2013,(9):10-11.

[3]   Song Haoxian. Four dimensions of TCM physical fitness in the era of big data [J]. Journal of Yunnan College of Traditional Chinese Medicine.2017.(1):77-81.

[4]   Xu Yanran, Xue Sha. Traditional Chinese Medicine Diet Health [J]. clinical journal of traditional Chinese medicine.2017(11):1823-1826.

[5]   Huang Yabo. Big Data Analysis of Traditional Chinese Medicine Plaster Research------Also on the Inheritance and Development of Traditional Chinese Medicine Plaster J. Jiangsu Traditional Chinese Medicine,2017(12):4-8.