

Research and Practical Exploration on the Mechanism of Integrating Healthcare with Traditional Chinese Medicine

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Abstract: Such issues as the insufficient formation of intervention approaches, absence of individualization, and adaptability are also characteristic of modern medicine. It is on this basis that the interventions of the traditional Chinese medicine (TCM) are portrayed against to the healthcare management in this article. It will aim at the general regulation of physiological, psychological, and behavioral dimensions by means of personal health evaluation practices and acupuncture, massages, medicinal food, and lifestyle advising. Experimental design has been adopted to subject both the experimental group and the control group to the complete TCM interventions which include healthcare management and regular health management. The data on the physiological indicators, psychological condition, and lifestyle habits was documented at the end of a span of intervention (8 weeks). The results showed that the systolic blood pressure decreased in the experimental group of 138.2 ± 12.5 mmHg to 128.7 ± 10.3 mmHg (the intervention had reduced blood pressure by 6.9%), and the fasting blood glucose decreased by 6.8 ± 0.9 mmol/L to 6.1 ± 0.7 mmol/L (a reduction of 10.3%).

1. Introduction

The needs of most people in regard to health have been diversified due to the high pace of modern lifestyle and the aging population. The chronic condition is increasing, the percentage of the population living in a sub-healthy state is increasing and the mental pressure is out of hand. The conventional medical treatment or the traditional Chinese medicine is not only insufficient anymore to assist the actual needs of personal and dynamic management of health. Despite the scientific and quantitative advantages of using advanced medical treatment in disease diagnosis and health monitoring, it has several disadvantages concerning the impossibility of providing long-term care of

health, holistic conditioning, and psychological adaptation, including the lack of personalized interventions and procedures. However, on the contrary, the holistic approach, syndrome differentiation and treatment and the mind-body regulative components of the traditional Chinese medicine may adequately improve the body functions, the state of mind and the lifestyle practices. It still, nevertheless, lacks in the measurement of intervention effects, permanent observation, and scientific validation.

This article begins with a mechanistic analysis, systematically exploring the matching mechanisms, physiological and psychological pathways, and synergistic mechanisms of treatment and prevention between traditional Chinese medicine intervention and modern healthcare in health management. At the practical level, it designs a comprehensive health management model, diversified service pathways, and mechanisms for monitoring and optimizing intervention effects. Furthermore, it verifies the operability and specific effects of the intervention through experimental design, forming a generalizable health management model. This research not only enriches the theoretical framework of health management but also provides insights for chronic disease management, sub-health intervention, and community health services.

2. Related Work

In recent years, with the continuous integration of modern technology and traditional medical research, the application of artificial intelligence, drug delivery systems and traditional Chinese medicine herbs in health management and disease treatment has gradually become a hot topic of academic attention. McGee explored the application of the advanced artificial intelligence system Deepseek in the study of Tai Chi and Qigong medicine. Deepseek was asked to write an article on the application of Baduanjin and Yang-style 24-form Tai Chi in medical research. Although Deepseek can effectively summarize and organize relevant research and provide a clear analysis, its cited references are completely inaccurate because it cannot access professional databases, resulting in fictitious cited content. The study believes that Deepseek is a powerful tool that can help summarize complex literature and provide comprehensive analysis, but because it cannot provide accurate citations, it is most suitable as an auxiliary research tool rather than the final reference source for academic work [1]. Traditional Chinese Medicine (TCM) has been used for thousands of years in the treatment of Gouty arthritis (GA) with good results and few side effects. Guo et al. summarized 541 relevant studies from 2000 to 2023 and explored the potential of TCM prescriptions, Chinese herbal extracts and their active ingredients in the treatment of gout and GA, especially the application in combination with modern medicine [2]. Costa-Font and Sato studied The Herbal Medicine Paradox (HMP) to explore the reasons why herbal use continues to exist under the popularization of modern medicine. Through the analysis of migration data of first-generation (N=3630) and second-generation immigrants (N=1618) in 30 European countries, it was found that herbal use is significantly related to the cultural norms of the country of birth, with a stronger influence from second-generation immigrants, a greater influence from the maternal line than the paternal line, and varies from country of origin to country of immigrant. The results support the explanation of the HMP phenomenon by cultural factors[3]. Alburyhi et al. reviewed the prospects of combining new drug delivery systems with herbal medicine, and explored drug delivery methods including oral disintegrating tablets, transdermal dosage forms, nanoparticles and other advanced technologies to improve the therapeutic effect of herbal compounds and reduce side effects. Using heat-cold homogenization, co-precipitation, nanoprecipitation and other technologies to load plant components into nanoparticles, the stability and targeted delivery of herbal drugs were significantly improved. Its application in cancer treatment, liver protection and cardiovascular diseases was discussed, and the importance of modern botanical pharmacology research in herbal

delivery systems was emphasized[4]. Chaudhary and Rajora reviewed the structural characteristics of phytosomes and their role in improving the bioavailability of plant active ingredients. Plant active ingredients such as flavonoids and glycosides are usually difficult to penetrate lipid membranes, while liposome structures can enhance their absorption and efficacy. In cancer treatment, phytosomes can assist traditional therapies and improve the anti-cancer effect of herbal medicines [5]. Although existing research has made some progress in artificial intelligence-assisted literature review, traditional Chinese medicine treatment and herbal delivery technology, there are still bottlenecks such as inaccurate literature citation, insufficient quantification of intervention effects, lack of verification of adaptability in different populations, and unclear mechanisms of multi-technology integration.

3. Method

3.1 Analysis of the Mechanism of Integrating Healthcare and Traditional Chinese Medicine

3.1.1 Matching Mechanism between Healthcare Needs and Traditional Chinese Medicine Interventions

Modern healthcare emphasizes individualized and holistic management, with core objectives including controlling chronic diseases, regulating sub-health conditions, and maintaining functional health. In a bid to balance the physiology, hypertension and diabetes are chronic and are usually long term interventions. Traditional Chinese medicine (TCM) can provide a certain treatment regime dependent on the syndrome differentiation and treatment and one such example is the use of Chinese herbal medicine to regulate the organ functions and Yin and Yang balance to help in the improvement of the chronic disease. Disease prevention and conditioning of the constitution is the major concern of the sub-healthy individuals. TCM therapies such as massage, acupuncture, and medicinal diets can increase immune response, regulate flow of Qi and blood and control physical capabilities and psychological conditions. The main functional regulation should involve recovery of sports injuries, sleep control and stress treatment on the psychological level. Some of the health maintenance methods that can be applied by TCM are unblocking of meridians and control of feelings. Overall, it is possible to state that TCM techniques are quite compatible with the contemporary health management needs, where the healthcare fraternity has the opportunity to complement each other in disease prevention and rehabilitation, and improvement of the quality of life.

3.1.2 Physiological and Psychological Mechanisms

The concepts of the traditional Chinese medicine (TCM) puts emphasis on the circulation of Qi and blood, coordinations between the organs, and the meridians openness in physiological controlling, which assists in promoting the overall functioning of the body as a whole through wholesomeness. Acupuncture, massage and herbal medicine stimulate the meridians and acupoints positively on the Qi and the circulatory of the blood therefore enhancing the functioning of the organs and consequently the functional disorders, depressed immune system and chronic diseases. Meanwhile, in TCM mental intervention is welcomed, as well. Emotional regulation and mind-body synergy are the most crucial processes of TCM intervention. It is capable of reducing stress, reducing anxiety, and improving the quality of sleep, establishing a symbiotic relationship of physiological and psychological impact owing to the implementation of psychological counseling, pharmaceutical diets, and respiratory drills. This interaction between physiology and psychology is what allows TCM to play a long run role in the overall health management of the body even beyond

its ability to help in the alleviation of symptoms that people experience but to enable a dynamic balance in the health of the person.

3.1.3 Synergistic Mechanism of Treatment and Prevention

Integration Traditional Chinese medicine (TCM) is based on the concept of disease prevention before its occurrence. Treatment of various syndromes and prevention of diseases, regulation of health and lifestyle counseling during disease prevention stage ensures the elasticity of the body and the reduction of the likelihood of disease occurrence. At the health intervention and disease treatment stage, TCM changes the treatment regime based on dynamic control technology, which ensures that the treatment process is consistent with the physiological and psychological state of the individual, and treatment and prevention process are interrelated. Indicatively, in the prevention of chronic diseases, the periodic TCM treatments can delay the onset of the illness, but the lifestyle education and psychological counseling can reduce the number of complications. It is through this dynamic feedback and adjustment model that the practice of healthcare and TCM is not only more successful in treatment but also a closed loop in the entire health management up to the long-term, this is the very definition of TCM as a component of the modern healthcare management system.

3.2 Practical Exploration of Integrating Healthcare with Traditional Chinese Medicine

3.2.1 Design of a Comprehensive Health Management Model

In fact, the whole idea of incorporating healthcare with the Traditional Chinese Medicine (TCM) is based on the creation of an individualized and a step-by-step health management system. Firstly, a full health check-up tests and analyzes the physiological indicators (blood pressure, blood sugar, and body type) of an individual, psychological state (level of emotion and stress) as well as the existing lifestyle to create a proper health image. Based on this fact, the TCM intervention programs can be structured to satisfy some health needs. As an example, patients with Qi deficiency can use TCM to restore the balance between Qi and blood, patients with insomnia can enhance the quality of sleep through acupuncture and acupressure, and patients with chronic illness can undergo long-term conditioning with the help of medicinal diets and lifestyle recommendations. Second, health management plan will be implemented in steps: conditioning stage on a daily basis which is more lifestyle change and mild TCM oriented, and periodical conditioning stage where specialized TCM methods (acupuncture, massage and medicinal diet therapy) and feedback of health data to the polished management is to be provided. This model will ensure that the interventions are not just individualized but also sustainable in that they will make the health to be improved overall.

3.2.2 Diversified Service Paths

The diversification strategy of service delivery, which rests on online and offline strategies, is to be deployed in an effort to satisfy the demands of greater accessibility and convenience of the TCM health interventions. The online services can be remote consultation with TCM, health management applications, and TCM instructions, which constantly condition the patient and monitor his or her health at home, thus registering the physiological data in real-time, i.e., blood pressure, blood sugar, heart rate and physical condition change, to achieve a closed-loop health management system. Furthermore the online practices and offline may be complementary: data on online monitoring can help in the optimization of offline interventions and the results of offline interventions can be fed over the online system in real time to create a data-driven full process health management system. The coverage of the TCM interventions will not only increase as well as the individual participation and health management attendance, but the coverage as well.

3.2.3 Effect Monitoring and Optimization Mechanism

To offer the efficiency of interventions and the highest quality of health management, it is necessary to introduce the scientific monitoring and optimization mechanism. To begin with, the effectiveness of the intervention should be assessed periodically, not only regarding the change in physiological parameters (blood pressure, blood sugar, and immune indicators) but also more specific features of the quality of life (sleep, physical fitness, and mental status) and mental health (emotional stability and coping with stress). Second, the changes would take place in terms of the evaluation outcomes: at the stage, when the intervention effects are not significant, the TCM (Traditional Chinese Medicine) plan would be adjusted, i.e. the medicinal diet formula would be modified and the frequency of the massage or acupuncture could be provided more or the latter could be used with the psychological adjustment programs in order to enhance the efficiency. Simultaneously, one could develop a data collection and analytical system that would incorporate the information of different stages of interventions and design a model of intervention outcomes to be capable of recommending individuals with different constitutions and health needs to it. It is this step that not only creates the impetus of the immediate effect of combining healthcare with TCM, but also allows improvement and further optimization of long-term health maintenance in order to achieve scientific and sustainable high-quality management of health.

4. Results and Discussion

4.1 Intervention Subjects and Grouping

The subjects of the experiments were the patients with chronic diseases and those who were in sub-healthy condition and they were randomly grouped taking into consideration their health status, age and gender. In the experiment, the intervention of the traditional Chinese medicine and medical and health care management (acupuncture, massage, medicinal diet and daily health advice) were applied to the experimental group and the control group only received normal health management. It used the random number table to group to offer the balance of the experimental subjects characteristics. The groups were manipulated to 34 to ensure that the statistical analysis will be effective.

4.2 Intervention Content and Process

Chinese Intervention- Traditional Chinese Medicine.

Acupuncture and Massage: Three times a week, to treat some acupoints to control the constitution or alleviate the symptoms.

Medicinal Diet Therapy: A diet-therapy plan was developed on a weekly basis, which was based on the constitution and the health condition of a person, and stayed on 4-8 weeks.

Emotional Management and Lifestyle Education: Breathing training, emotion management and sleep improvement recommendations.

Medical and Health Care Administration.

Physiological Indicator Following: Physiological parameters such as blood pressure, blood sugar, heart rate, weight and complete blood count were measured every week.

Lifestyle Interventions: Exercising regimen, the modification of the sleeping schedule and nutrition, all of this in addition to Traditional Chinese Medicine (TCM).

4.3 Intervention Cycle and Observation Points

The intervention cycle will consist of 8 weeks and there are three key points of observation that will be observed:

Baseline Phase: A week before the intervention, the various physiological data, psychological status of scores and lifestyle patterns are collected.

Mid-term Phase (Week 4): This is the stage of preliminary assessment of the difference in physiological signs, alterations in lifestyle habits, and alteration of the mental state.

Endpoint Phase (Week 8): After the intervention has been completed, data collection is performed in detail as the basis of final effect evaluation.

4.4 Data Collection and Indicator System

Physiological Indicators: Blood pressure, blood glucose, heart rate, immune function indicators, etc., used to quantify the health intervention effect.

Psychological and Quality of Life Indicators: Psychological stress, emotional condition, and quality of life will be measured with the assistance of standard scales (such as PSS, SF-36).

Behavioral Compliance: The compliance on exercises, diet and sleep patterns are reported to define the operability and compliance of the intervention plan.

Table 1. Comparison of the physiological indicators of pre intervention and post intervention between the experimental group and the control group.

Group	Indicator	Pre-Intervention (Mean \pm SD)	Post-Intervention (Mean \pm SD)
Experimental	Systolic Blood Pressure (mmHg)	138.2 \pm 12.5	128.7 \pm 10.3
	Diastolic Blood Pressure (mmHg)	86.5 \pm 8.7	80.4 \pm 7.6
	Fasting Blood Glucose (mmol/L)	6.8 \pm 0.9	6.1 \pm 0.7
	Heart Rate (beats/min)	78.4 \pm 9.2	72.6 \pm 8.1
Control	Systolic Blood Pressure (mmHg)	137.5 \pm 11.9	134.8 \pm 12.2
	Diastolic Blood Pressure (mmHg)	85.9 \pm 9.1	83.7 \pm 8.9
	Fasting Blood Glucose (mmol/L)	6.7 \pm 0.8	6.5 \pm 0.9
	Heart Rate (beats/min)	77.9 \pm 8.7	76.4 \pm 8.4

In the experimental group, systolic blood pressure decreased from 138.2 \pm 12.5 mmHg to 128.7 \pm 10.3 mmHg, a decrease of approximately 6.9%; diastolic blood pressure decreased from 86.5 \pm 8.7 mmHg to 80.4 \pm 7.6 mmHg, a decrease of approximately 7.1%; fasting blood glucose decreased from 6.8 \pm 0.9 mmol/L to 6.1 \pm 0.7 mmol/L, a decrease of approximately 10.3%; and heart rate decreased from 78.4 \pm 9.2 beats/minute to 72.6 \pm 8.1 beats/minute, a decrease of approximately 7.4%. Relatively, the control group had less pronounced changes in the various indicators in the

same period with systolic blood pressure variation of a negative 2.0 percent, diastolic blood pressure variation of a negative 2.6 percent, fasting blood glucose variation of a negative 3.0 percent and heart rate variation of a negative 2.0 percent. As table 1 shows, the intervention in the experimental group was much more beneficial than the traditional healthcare intervention in terms of blood pressure reduction, blood sugar and heart rate reduction, which reflects the advantages of using the traditional Chinese medicine intervention in combination with the healthcare in managing the physiological functioning. Based on the three dimensional model of health management, it can be concluded that the intervention does not simply affect physiological pointers but also exerts a synergistic effect in the shape of psychological adjustment and behavior change that provides a scientific illustration to the ethnicity of health management.

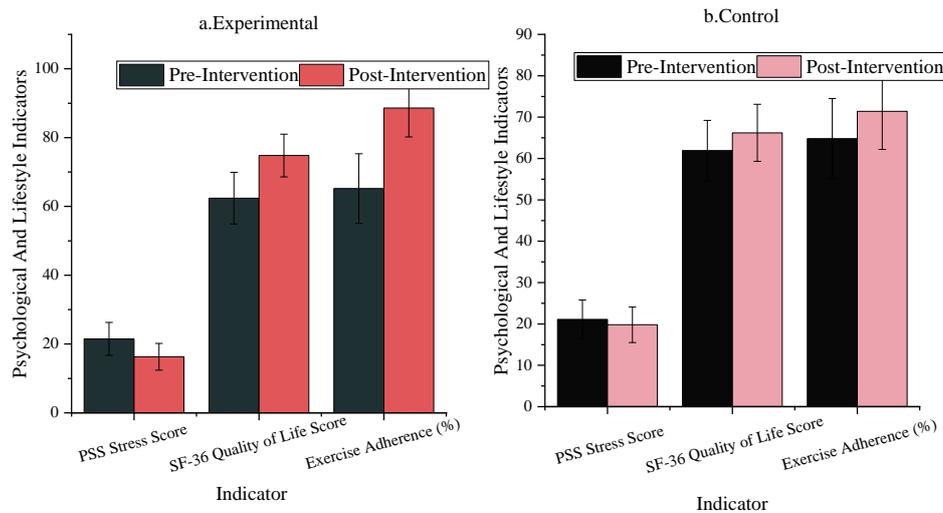


Figure 1. Comparison of psychological and behavioral indicators in the experimental and the control groups

After receiving TCM intervention combined with healthcare management, the experimental group showed significant improvements in both psychological stress and quality of life. Specifically, the experimental group's PSS stress score decreased from 21.5 ± 4.8 to 16.3 ± 3.9 , a decrease of approximately 24.2%, indicating a significant reduction in stress levels after the intervention; the SF-36 quality of life score increased from 62.4 ± 7.5 to 74.8 ± 6.2 , an increase of approximately 19.9%, showing that the intervention effectively improved overall quality of life; and the exercise adherence rate increased from 65.2 ± 10.1 to 88.6 ± 8.4 , an increase of approximately 35.8%, indicating that the intervention significantly enhanced individuals' adherence to health behaviors (see Figure 1a). In contrast, the control group showed limited improvement within the same period, with a PSS stress score decrease of approximately 6.2%, an SF-36 quality of life score increase of approximately 6.9%, and an exercise adherence rate increase of approximately 10.1%, indicating a significantly lower intervention effect than the experimental group (see Figure 1b). The results in Figure 1 show that the combination of TCM intervention and modern health management not only has a positive effect on physiological indicators, but also has significant advantages in psychological adjustment and improvement of health behaviors, providing a practical basis for individualized and multi-dimensional health management strategies.

5. Conclusion

The article discusses a holistic health management framework integrating both the medical and traditional Chinese medicine (TCM) interventions at three levels, which are physiological,

psychological and behavioral levels. This will promote effectiveness of chronic disease management and sub-health conditioning implemented through individual health testing and maximization of intervention dynamism. In accordance with the experimental findings, experimental group receiving intervention of TCM accompanied with the management of medical care had demonstrated notable improvements of physiological (blood pressure, blood sugar, heart rate) and psychological and behavioural (stress levels, quality of life, exercise adherence) indicators, and significantly better results when compared with the control group receiving conventional health management. This means that the synergetic effect of TCM intervention and modern medical care can be generally governed in order to help individuals cope with managing their health towards refinement, personalization and active optimization. However, this study also has certain limitations. First, the sample was mainly grounded on chronic disease and sub-health cohorts in the case of the experiment; in further studies, the sample should be extended to cover a wider population. Second, the study did not consider the influence of different cultural backgrounds and living conditions on effectiveness of health management comprehensively, so, the effect of integration of different health intervention methods and utilizing artificial intelligence and analysis of big data to further streamline intervention strategies and promote the development and spread of personalized health management systems should be re-established in the future research.

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