

Exploring a New Model of Multidisciplinary Health Prevention in the Context of an Epidemic

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Abstract: *Effective preventive and control measures are important for the control of outbreaks of infectious diseases such as Coronavirus Virus Disease 2019(COVID-19). By reviewing the preventive and control measures in this epidemic, we have explored a health prevention model that integrates online and offline, unifies thoughts and behaviours, combines prevention and control within and outside the hospital, and provides synergistic interventions between internal and external treatments. This innovative prevention model embodies the concept of “treating the disease before it happens” in Traditional Chinese medicine and is expected to provide lessons for the prevention of other diseases.*

Keywords: *Epidemic; Health Prevention; Multi-Position; COVID-19.*

1. Introduction

The outbreak of Coronavirus Virus Disease 2019 (COVID-19) has been spreading rapidly since the beginning of the epidemic and is now spreading in many countries and regions around the world. As the epidemic continues, the Omicron strain has replaced the Delta strain as the predominant strain; the newly mutated strain has a higher vaccine infectivity and transmission rate [1]. The World Health Organization (WHO) reports that as of March 2022, the cumulative number of confirmed cases of disease worldwide has exceeded 400 million, and the number of infections continues to rise [2]. Therefore, health prevention of the epidemic remains crucial to the current situation to date.

As with Severe Acute Respiratory Syndrome (SARS), influenza and other infectious diseases, effective vaccination is an effective preventive measure against COVID-19, with a total of 10925055390 doses of vaccine administered worldwide as of March 17 [2]. However, effective vaccines do not meet the demand for prevention in the early stages of an epidemic due to the long research period and the rapidly changing nature of the epidemic, so it is important to implement effective preventive measures to prevent the disease and control the epidemic. During the epidemic, various measures have been taken to prevent the disease and the epidemic from progressing, and have achieved good results. Firstly, the online information exchange methods such as online publicity, attendances and consultation during the epidemic avoided close contact of people and played an important role in preventing the spread of the epidemic. Secondly, the implementation of measures such as health codes, square cabin hospitals and isolation sites facilitated the completion of personnel screening, controlling the source of infection and cutting off the transmission route, effectively preventing the further spread of the disease. Finally, Traditional Chinese medicine (TCM) has accumulated a wealth of experience in disease prevention over a long period of time, and the concept of “treating the disease before it happens” has also played an important role in this epidemic, as researchers have suggested that the treatment of the spleen and stomach should be used throughout the whole process of prevention and treatment, which can effectively strengthen the body's immune function [3]. Such diverse and effective preventive and control measures deserve to be explored, summarised and studied in depth. Therefore, this paper reviews the preventive measures in this outbreak and explores the model of health prevention in this COVID-19 outbreak with a view to providing reference for the prevention of other diseases.

2. Combine online and offline

During the epidemic, the identification of cases, the implementation of preventive and control measures and the treatment of the disease were carried out in communities and cities at the earliest opportunity. For example, in Wuhan, in order to provide immediate treatment to the “four categories” of

patients, including confirmed patients, suspected patients, febrile patients who could not be definitively excluded from the new pneumonia and close contacts of confirmed patients, door-to-door investigations were carried out at street and community levels [4]. In order to control the source of infection and the spread of the epidemic to the greatest extent possible, Wuhan City has been closed to departures from Han since 23 January and it was not unsealed until 76 days later. Such on-site preventive and protective measures are timely, intuitive and effective, and play an important role in the early detection and prevention of outbreaks. However, these traditional offline methods are far from sufficient for epidemic prevention.

With the rapid development of information technology, access to information has become more diverse and convenient. COVID-19 as an acute respiratory infectious disease, the main sources of infection are infected patients and asymptomatic infected patients, and the main routes of transmission are respiratory droplets and close contact, in addition to being in a closed environment with the source of infection or coming into contact with contaminated objects [1]. Therefore, reducing close contact is the key to disease prevention and control. New media, the Internet and other online channels can be used to disseminate knowledge about epidemics and treat diseases, and “big data + networking” can be used to the traceability, monitoring, detection, screening and early warning of epidemics, all of which can effectively help contain the spread of epidemics [5, 6].

First, online channels such as the Internet and new media played an important role in disseminating information on how to recognise COVID-19, take protective measures, eat healthily, exercise at home, and provide psychological support during the outbreak. Some studies have shown that during the epidemic, television, WeChat, Weibo and web pages were the main channels for the public to obtain information about COVID-19, and from 18 January to 5 March 2020 alone, 8 Disease Control Agency institutions published a total of 1,312 messages on their WeChat public platforms, with the highest proportion of educational content on epidemic prevention and control (71.72%) [7-9]. This online approach allows for the timely transmission of information while effectively avoiding close contact. Secondly, the “Internet+ Health” model solves the problem of difficult access to health care.[10] During the initial period of the epidemic, medical advice and regular follow-ups for other chronic diseases can be resolved through online communication, which greatly facilitates access to medical consultation and medication during the epidemic [11]. For example, the Shenzhen Health Care Commission has set up two Official accounts to provide the public with common services such as appointment booking, epidemic disease index enquiry and “appointment with a family doctor” [12, 13]. Finally, the reporting of cases, epidemiological investigation and epidemic investigation were improved by means of big data and network. During the epidemic, according to the prevention and control requirements, suspected and confirmed cases of COVID-19 pneumonia need to be reported online directly in a timely manner, enabling people to know the epidemic dynamics in real time [6].

In an epidemic, the combination of offline and online can accurately, quickly and comprehensively grasp the epidemiological information related to the onset of cases to achieve early detection, early reporting, early isolation and early treatment of the epidemic and achieve the purpose of disease prevention [5, 6].

3. Unity of thought and action

In this epidemic, the public attached great importance to prevention and control work from the ideological point of view, not only receiving ideological health education on prevention and control of diseases, but also implementing health education contents such as wearing masks when traveling, cooperating with temperature measurement and showing health codes into daily life. Relevant national agencies have issued reports on the prevention and control of the epidemic pointing out the importance of strengthening health education and clearly regulating the content of health education [14, 15]. That is, it is required to strengthen the concept that each individual is the first person responsible for his or her own health, and to continue to consolidate preventive measures for the new crown pneumonia, such as frequent ventilation, frequent hand washing, maintaining social distance, and using public chopsticks. Advocating individuals to take social responsibility awareness and behavior in preventing and controlling infectious diseases, consciously accepting and cooperating with preventive and control measures such as taking temperature, checking health codes, isolation, etc.; consciously wearing masks when going out when symptoms such as fever, coughing and sneezing appear, not spitting, respecting others' health and fulfilling social responsibility, etc. [15]. Universities and related institutions also launched health education efforts on knowledge related to the new crown pneumonia. The requirements for preventive and control measures such as maintaining social distance, wearing masks when traveling, consciously

accepting temperature monitoring, and checking health codes were indeed implemented into the daily behavior of individual members of the public. The results of one study showed an overall mask wearing rate of 97% during the outbreak, with 96.5% of survey respondents using masks in public places [16].

4. Joint prevention and control within and outside the hospital

For the prevention and control of major infectious diseases, hospitals have always been the main battlefield, with medical and nursing staff being the main combatants. In response to the epidemic, Wuhan quickly established the Wuhan Fire God Mountain Hospital, the Wuhan Thunder God Mountain Hospital, and 13 square cabin hospitals. However, it is not enough to rely on hospitals and medical workers alone to prevent and control the epidemic. The community also needs to respond positively to reduce the spread of the virus and contain the spread of the disease, so as to reduce the pressure on hospitals and medical staff from the root. The two groups of forces inside and outside the hospital acted together to better prevent the disease. During the epidemic, in order to centralize the treatment of cases, according to the principle of “centralized patients, centralized experts, centralized resources and centralized treatment”, medical institutions have increased the number of designated hospitals, treatment beds and fever clinics to enhance the role of sentinel and early warning of infectious diseases and build a strong Public Health System. Each medical institution has effectively prevented nosocomial infections by revising and improving the rules and regulations related to the prevention and control of infectious diseases in hospitals, and conducting full staff training to improve the protection and treatment capabilities of medical staff [17, 18]. In order to better prevent and control the disease, in addition to the medical system's active prevention and treatment efforts, other non-medical groups in the community have also responded positively by taking relevant preventive and control measures. In order to reduce cross-infection and control the spread of the disease, hotels and guest houses have set up “isolation points” [19]. In order to block the transmission route, minimize the movement and gathering of people, and curb the continuous spread of the virus, strict hygiene management has been carried out in trains, planes, ships and other means of transportation as well as stations, airports, ports and other places, and epidemic prevention measures such as passenger temperature screening have been strictly implemented. In order to reduce the public gathering activities and reduce the gathering of people during the epidemic, all kinds of large-scale activities are cancelled or delayed, cultural and tourism facilities are closed or closed, and hotels, restaurants, commercial business units and other announced places are actively disinfected and ventilated. In this epidemic, it is important for individuals to take the initiative to monitor their own health and that of their family members, actively seek medical attention when problems are detected, maintain a positive and optimistic attitude, develop good lifestyle habits, exercise moderately, and minimize outdoor activities. By taking the initiative to prevent and control the epidemic as a whole, we can achieve the goal of prevention and control for each individual [20]. The medical system and the community act jointly to control the source of infection and contain the transmission route to the maximum extent, so as to achieve the purpose of prevention, treatment and control of the epidemic [6].

5. Combination of internal and external treatment

TCM plays an important role in the prevention of diseases, and it has been involved in the prevention and control of the epidemic at an early stage and throughout the whole process; the concept of “treating the disease before it occurs” has been used to guide the prevention of diseases, and Chinese medicine has played an important role in regulating the state of the body, improving immunity and fighting off viruses. The synergistic treatment of internal and external treatment can maximize the preventive effect of TCM and achieve the purpose of epidemic prevention. Internal treatment methods such as the use of Chinese herbal medicine, Chinese patent medicine, dietary therapy; external treatment methods include traditional exercises such as taijiquan and Baduanjin, and also include the use of Chinese medicine appropriate techniques such as acupuncture, moxibustion, massage, fumigation, medicinal bath, aromatherapy, acupressure, auricular point therapy, etc.

Chinese herbal medicine, medicinal diets, medicinal tea, and Chinese patent medicine are important components of Chinese medicine in the prevention and treatment of diseases and have played an important role in the prevention of this epidemic. Several herbal preventive formulas based on Yu Ping Feng San were proposed and applied in the first place [21]. Four studies analyzed the use of Chinese herbal medicines in the prevention and treatment of COVID-19 and found that the prevention program mostly focused on strengthen the spleen and qi, detoxify and dissolve moisture, and combining internal and external therapies; the use of medicines gave full play to the concept of “treating the disease before

it occurs” in Chinese medicine; comprehensive evaluation of high-frequency drug pairs, high-frequency drug groups and network diagrams found that “Fangfeng (*Radix Saposhnikoviae*), Baizhu (*Rhizoma Atractylodis Macrocephalae*) and Huangqi (*Radix Astragali*)” were the high-frequency core drug groups, and there was a significant correlation [22-25]. In addition to internal and external preventive herbal formulas, Chinese patent medicine are recommended for the prevention of COVID-19. Some researchers suggest using a decoction of sheng Huangqi (*Radix Astragali*), shashen (*Radix Adenophorae seu Glehniae*), sheng Gancao (*Radix et Rhizoma Glycyrrhizae*), lianqiao (*Fructus Forsythiae*), cangzhu (*Rhizoma Atractylodis*) or a decoction of Suye (*Folium Perillae*), huoxiang (*Herba Agastachis*), chenpi (*Pericarpium Citri Reticulatae*), caoguo (*Fructus Tsaoko*), and shengjiang (*Rhizoma Zingiberis Recens*) as tea. The two tea recipes are mainly for people with weak resistance to lung qi deficiency constitution, poor function of spleen and stomach, or spleen-dampness constitution [26]. Chinese patent medicines such as Huoxiang Zhengqi Capsules (water), Jinye Baidu Capsules, Lianhua Qingwen capsule and Jinhua Qinggan granules can also be used appropriately for disease prevention [26].

Traditional exercises is an important part of TCM, not only as an important means to maintain health in TCM, but also as the main method of holistic treatment in the external treatment of TCM, which plays an important role in disease prevention. Through the comprehensive exercise of body adjustment, pranayama and heart adjustment, the traditional exercises achieves the purpose of adjusting the central nervous system, enhancing the body's resistance and adaptability, and ultimately improving the function of the entire body and improving the body's immunity. Moreover, the use of traditional exercises can be used regardless of the occasion, simple and easy to learn, inexpensive, and more suitable for universal promotion and application, which is a better mode of health prevention. Some experts have done research on the application of traditional exercises in the prevention and rehabilitation of COVID-19 and suggested that it should be applied earlier in the prevention and rehabilitation process [27]. Other experts advocate the practice of Baduanjin in combination with Chinese herbal medicine to achieve the purpose of strengthening the body resistance to eliminate pathogenic factors [28]. In addition to traditional exercises such as Taijiquan and Baduanjin, aerobic exercises, yoga and aerobics are also beneficial for strengthening the body, improving the immunity of the body and achieving the purpose of disease prevention.

Moxibustion and herbal aromatherapy are also effective for disease prevention. Moxibustion stimulates the meridian qi by igniting moxa to adjust the disordered physiological and biochemical functions of the body to achieve the health prevention effect of resisting diseases. The results of a study showed that suspension moxibustion combined with acupoint application improved the body's sub-health status and enhanced the immune system of patients [29]. Aromatherapy is one of the common external treatment methods used in ancient times to prevent infectious diseases. There are two types of usage methods, one method is to burn or steam the Chinese herbal medicine with the help of fire to promote the herbs to emit medicinal fragrance. The other is to make the Chinese herbal medicine into a scented capsule to wear with you, using the fragrance of the medicine to achieve the purpose of conditioning the human body, and this therapy has the advantages of simple formulation, easy to carry, and suitable for all kinds of people, etc. [26, 30]. Some experts believe that we should make full use of the external treatment of Chinese herbal medicine, using the aroma of drugs to purify and disinfect the environment, to achieve the purpose of disease prevention, but also to relieve the pressure of the national epidemic prevention materials shortage [30]. Researchers have also developed a medicated sachet that can be worn during the COVID-19 period to regulate the body and prevent disease through this method [28].

6. Conclusion

By systematically reviewing the preventive measures in the previous epidemic, and combining the advantages of modern information technology and TCM, this study tries to analyze a health prevention model that combines online and offline, unifies thoughts and behaviors, builds a solid fortress against the epidemic with joint prevention and control inside and outside the hospital, and integrates internal and external treatment and collaborative intervention, which is the advantage and innovation of this paper. However, there are limitations in this paper: first, the pathological nature of the disease was not explored in depth, and the prevention of the disease was not explored in the context of its pathogenesis; second, the study was analyzed only for Chinese data, and studies published in other languages were not included, so there may be bias.

Based on the current form of the epidemic, the prevention of the epidemic should not be neglected and slackened. Therefore, both in terms of national policy requirements and individual health needs, effective preventive measures should be actively taken to prevent the occurrence, development and

spread of the epidemic and to protect the physical and mental health of the public. It is also hoped that the multi-layered health prevention model in this study will provide a reference for future prevention of COVID-19 and other similar infectious diseases.

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