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Review

The connotation and path of sports promoting "proactive health" strategy

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ABSTRACT

In response to an aging population and the accelerated transition from a disease-centered approach to a people's health-centered approach, proactive health has become an essential component of China's future health security system. Sports are a significant part of the proactive health strategy. Using Citespace 6.2.2 visualization analysis software, 211 effective documents were visually analyzed. It is believed that the focal points for implementing the "proactive health" strategy include: 1. Insisting on "moving the focus upstream" to curb diseases at their budding stage; 2. Dialectically viewing the aging population, regarding the elderly from a "positive perspective"; 3. Creating a proactive health environment and improve the proactive health security system; 4. Popularizing health knowledge scientifically, promoting the health literacy and health behaviors of the elderly.

KEYWORDS

active aging, proactive health, connotation, focal points

1 Introduction

China's aging population is characterized by its large scale, deep extent, and high speed. Integrating positive aging perspectives and healthy aging principles into the entire process of economic and social development is a scientific concept and effective practice in line with the implementation of the spirit of the 20th Party Congress of Promoting Modernization of China's Population and Implementing Active Responses to the National Strategy for Aging Population. Health, as one of the important pillars of "active aging", is an important strategy for China to deal with the high-speed aging of the population, and it is also a practical choice for China to move from "healthy aging" to "active aging". "Active aging" focuses on lifelong health care, improving the quality of life of the elderly, preventing and reducing diseases, reducing the burden of premature death due to illness, and encouraging people to participate in social development.

The Fourteenth Five-Year Plan is an important strategic opportunity for China to deal with the aging of the population. Therefore, it is necessary to provide comprehensive health education to promote "proactive health" with a high level of health literacy [1]. As one of the important means of chronic disease intervention, exercise has been included in the active promotion of health planning. In 2015, the Ministry of Science and Technology set up an expert group for the Thirteenth Five-Year Plan for Digital Medicine and Health Promotion, which has a forward-looking plan for China's population and health. Subsequently, the Chinese government launched a special project for proactive health technology, exploring the formulation of a Chinese plan to curb the continuous deterioration of chronic diseases. The term "proactive health" was thus established, becoming an original concept proposed by China for the cause of human health. In response to the aging of the population and accelerating the transition from a disease-centered to a people's health-centered process, "proactive health" has become an important part of China's future health security system. This study discusses the implementation of strategies for promoting "proactive health" through exercise in the context of healthy aging, fully playing the unique role of exercise in promoting physical and mental health of the elderly.

2 Research workflow

2.1 Visualization of knowledge map

2.1.1 Data collection

Through the China National Knowledge Infrastructure

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(CNKI) database, an advanced search was conducted with "healthy aging" and "proactive health" as the themes, and the time range was from December 2012 to December 2022. A total of 239 related documents were retrieved. After excluding 28 documents such as conference notifications and popular science introductions, 211 valid documents were finally obtained.

2.1.2 Data format conversion

The valid literature is saved and exported in the format of RefWorks. The information of the valid literature includes: author of the article, research or organization, title, year of publication, keywords, abstract, journal, volume number and start and end page numbers, etc. The saved exported file name format is changed to start with "download". The CNKI data converter built in Cite space is used to import all documents into the database, convert the format into a data format that the software can recognize, and carry out literature clustering analysis.

2.2 Logical analysis method

On the basis of literature research, based on the background of healthy aging, the positive role of exercise in the implementation of "proactive health" strategies is analyzed. The process of health governance transitioning from the biomedical model to the sociobiological model is explored, and actionable action plans are proposed.

3 Research hotspots of "proactive health" based on cluster analysis

Keywords are a high-level summary of the research themes and core content of literature. Based on keyword co-occurrence analysis, the distribution and development of different research hotspots in a particular field can be understood (Fig. 1).

The research themes related to proactive health strategies mainly include:

Initially, the focus is on the built environment's implications for public health. A mounting body of evidence suggests that certain air pollutants may instigate or expedite age-associated illnesses, specifically respiratory afflictions such as chronic obstructive pulmonary disease (COPD) and lung cancer. China's initiation into environmental and health work commenced belatedly and has seen comparatively slow progression. However, with the nation's rapid industrialization, the human health ramifications of environmental contamination have become increasingly conspicuous, and the population's environmental health risks are ascending.

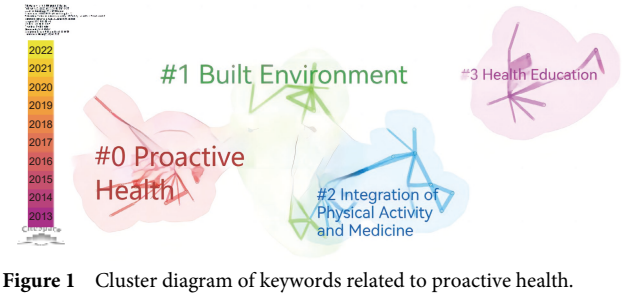

Figure 1 Cluster diagram of keywords related to proactive health.

Various studies have reported an upward trend in dementia incidence in economically disadvantaged countries, and one possible explanation is long-term exposure to air pollutants in these regions. The Healthy China Action encompasses 15 specified actions, among which the proposition of a healthful environment advances indices such as potable water for residents, environmental literacy, waste segregation, indoor air quality, emergency preparedness drills, and the recognition of environmental protection labels.

Responding to the high incidence of chronic diseases in older adults, future environmental and health initiatives should focus on harmonizing the sustainable development of urban built environments with the advancement of public health. This includes strengthening the establishment of healthful communities and augmenting the living environment and health literacy of residents.

Secondly, the nexus between physical activity and medical treatment is underlined. Within this amalgamation, the term "physical" typically denotes physical education and exercise, whereas "medicine" is largely associated with therapeutic practices. Certain scholars posit that "medicine" in the context of the physical activity-medical treatment integration should encompass preventive, curative, and rehabilitative aspects of both traditional Chinese medicine and Western medicine. This includes, but is not limited to, medical technology, resources, policy authority, regulations, systems, and related medical departments, along with derivative health service industries and the broader medical-health industry.

"Integration" in this case refers to the creation of a symbiotic pattern amongst multiple elements that results in a superadditive, "1 + 1 > 2" outcome [2]. The exploration of the symbiosis between physical activity and medicine was initially rooted in the realm of sports, gradually piquing the interest of the medical community. Consequently, the instrumental role of sports in fall prevention among the elderly, rehabilitation from cardiovascular, and cerebrovascular diseases, and mental health promotion is receiving increasing recognition.

Thirdly, the role of health education is pivotal. It serves as a guide for the general public to foster health awareness, amend detrimental behaviors, and diminish health risk factors. Health, in this context, transcends the confines of physical well-being and encapsulates mental health, social adaptability, and moral attributes. Certain scholars propose that public health education should extend its reach to covering domains such as genetic health, mental well-being, preventative medicine, comprehension of medical treatment limitations, and the understanding of mortality.

In the contemporary context, the most glaring deficit lies in public awareness regarding the constraints of medical interventions and the concept of death. A widespread societal habit is the over-reliance on medical institutions, with health responsibilities disproportionately placed on high-tier hospitals and renowned physicians. Concurrently, there is an ignorance towards disease etiology and the significance of disease prevention. Traditional perspectives on death, often treated as taboo, require urgent rectification, especially within the current narrative of active aging. The inevitable cycle of birth, aging, illness, and death is an inherent natural law. While death is inescapable, it is within our capacity to decelerate the natural aging process, prolong the duration of

healthy living, thereby augmenting the 'health span' alongside life expectancy.

In evaluating the historical trajectory, the concept of proactive health has transitioned from a mere emphasis on health education and health promotion to a more comprehensive embodiment within the scope of healthy China, progressing further into the realms of healthy cities and health services (Fig. 2). This evolution is marked by increased focus on health detection, proactive behavior enactment, and safety alertness.

Parallel to this, the advancement towards digitalization and intelligent healthcare exemplifies the core alterations in proactive health intervention modalities. Driven by the swift progression of technologies such as the Internet of Things, wearable health monitoring devices, and large-scale health data analysis, there is now a formidable technological base to facilitate continuous, comprehensive, dynamic, and real-time health status monitoring and feedback. This tech-infusion also empowers more efficient identification of health risk factors, thus marking a significant trend in the evolving landscape of health service provision (Fig. 2).

4 The connotation of implementing "proactive health" strategy under the background of active aging

Proactive health underscores the agency of individuals in maintaining and enhancing their own state of health. This includes regular exercise [3], a balanced diet [4], and ample sleep [5]. Moreover, "proactive health" involves regular medical check-ups, abstaining from unhealthy lifestyle habits such as smoking and excessive alcohol consumption [6], and proactive management of any extant health conditions or illnesses [7].

On a broader scale, "proactive health" also encompasses aspects of community and public health, including the education and promotion of healthy lifestyles, as well as empowering and encouraging community members to better manage their own health [8]. For example, an individual might regularly meet with doctors or other healthcare professionals to preemptively address potential health issues [9], rather than seeking medical aid only when symptoms or problems manifest.

"Aging" is the inevitable decline in a person's physical and psychological condition and is a natural life course. In September 2020, Chinese President Jinping Xi proposed at a symposium with experts in the fields of education, culture, health, and sports that "we need to promote the shift of the health focus to the forefront and establish a new model of exercise to promote health with the collaboration of multiple departments and the participation of the whole society". This provided the basis for exploring proactive health promotion plans for the elderly. Proactive health includes four dimensions: practice concept, participating subjects, implementation path, and health outcomes. It is a practice activity and medical model to achieve a higher level of public health by carrying out health interventions, cultivating healthy habits, and creating a healthy environment. It is guided by the holistic medical view and the prevention of diseases in traditional Chinese medicine, supported by modern technology, adhering to the leadership of the government, and mobilizing the initiative of society and individuals [10]. Aging occurs in every species and individual, and the whole life is undergoing the aging process. The "proactive health" strategy in the background of active aging emphasizes human subjectivity, that is, people's active participation in social activities, active integration and adaptation to the environment, and has rich connotations.

Firstly, the practice concept of proactive health. Proactive health is guided by concepts such as "prevention before disease" and "holistic view", and intervenes with appropriate methods such as prevention, health services, smart medical care, etc. The positive aging view guided by the concept of proactive health establishes a human-centered, suitable, whole-process, dynamic, comprehensive prevention system and personalized health services throughout life.

Secondly, the participating subjects of proactive health. The core subject of active aging is the individual, that is, the elderly need to take the main responsibility in health behaviors, enhance their self-healing ability and "proactive health"

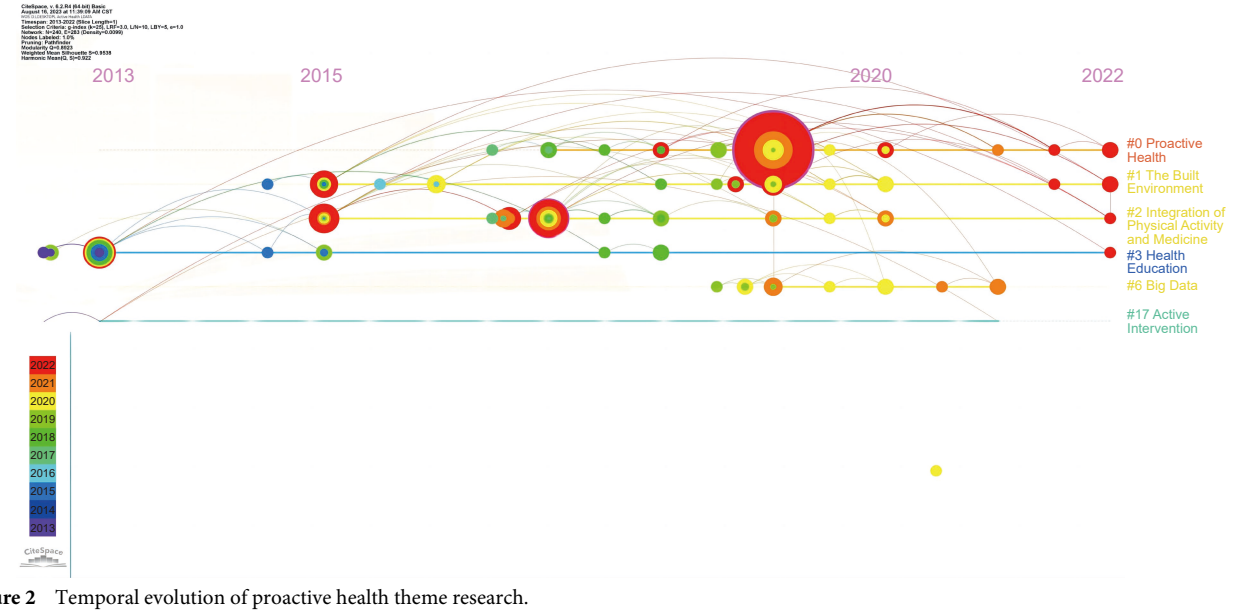

Figure 2 Temporal evolution of proactive health theme research.

management, and achieve the prevention and treatment of diseases by enhancing the overall function of the body. It emphasizes "subjectivity", that is, consciously and voluntarily choosing, accepting, and implementing health interventions, stimulating the elderly's intrinsic motivation with individual health experience and health needs, and external forces with health responsibility and social support, stimulating the subjectivity of elderly health and continuously improving the elderly's self-health behaviors.

Thirdly, the intervention ideas and methods of "proactive health" are diverse and complex, and need to be coordinated by multiple parties to integrate and effectively use resources. "Proactive health" is an important practical exploration to promote the health of the whole society guided by the diverse health needs of the public. Its construction path goes beyond the focus on individual behavior and includes broader social and environmental interventions, reflecting three levels of health environment construction, coordination of participating subjects, and shifting the focus of intervention.

Lastly, the health outcomes centered on people mainly focus on the enhancement of health capabilities and self-efficacy, improvement of health cognition, and improvement of life quality; social benefits are mainly reflected in the improvement of group health, reduction of pressure on the medical system, innovation in health technology, and development of the health industry.

5 Implementing the "proactive health" strategy in the context of positive aging through physical activity

Firstly, we need to adhere to the concept of "early prevention", curbing diseases at their budding state. The notion of "moving the fight upstream" aligns with the traditional Chinese medicine concept of "preventing illness before it starts". Many chronic diseases like diabetes, hypertension, and high blood urea are closely linked to unhealthy behaviors and lifestyle choices. The proactive health strategy promotes an "early-life prevention" approach and holistic strategies to better protect and promote health. The progression of chronic diseases marks a shift from health to illness, with a pre-disease or sub-health stage acting as a transitional phase. If this metabolic abnormality continues to progress, the body enters the clinical stage of diabetes. If identified early and intervened with exercise and diet, the onset of type 2 diabetes can be delayed or even reversed. Therefore, "moving the fight upstream" involves seizing the "window of opportunity" before a disease fully forms, and taking full advantage of community functions to organize health check-ups and early screening for the elderly, such as fall risk, cognitive impairment, etc., for early detection, intervention, and treatment.

Secondly, we should view population aging dialectically and look at the elderly from a "positive perspective". The pursuit of healthy longevity is human instinct, aging society is an inevitable result of societal progress and a symbol of societal maturity. Under the leadership of the party and the country, the average life expectancy of population in China has gone from around 35 years at the founding of the People's Republic to 77.3 years today, with over 40 000 people over 100 years old. This is a testament to the progress of socio-economic development and advances in science and technology. Elderly people still possess initiative and enthusiasm, and they can create personal and societal value through social participation. The decade after retirement at 60 is a golden time when life experiences, wealth, and resources accumulated are a valuable asset to families and society. We should view aging from a positive developmental perspective, promote lifelong learning and elderly education, and facilitate elderly people's full social participation. Societal comprehension and reverence towards the elderly can cultivate an enhanced social milieu, empowering them with more robust support for social involvement and the maintenance of vigor. Consequently, this nurtures the facilitation of proactive health strategies [11].

Thirdly, we need to create a "proactive health environment" and improve "proactive health insurance systems". The construction of a proactive health environment should meet the physiological and psychological needs of the elderly. For example, proactive health home environment renovations should be conducted to create functional living environments that can prevent falls and provide timely treatment when falls do occur, ensuring the safety of the elderly. Barrier-free environments, the attributes of the physical surroundings, and community backing are pivotal urban characteristics associated with active and wholesome aging. These aspects warrant further contemplation during the creation of environments conducive to the elderly [12]. Hence, the establishment of physical activity facilities for older adults, the enhancement of sports infrastructure, senior sports communities, 30-min exercise environment zones, and accommodating sports settings that correspond with the fitness and health-seeking needs of the aging populace can render elderly living more enriching, accessible, and healthful. In this proactive health environment, the enthusiasm of the elderly to participate in physical exercise is stimulated, thereby further improving the health level and quality of life of the elderly. On this basis, an insurance system for elderly people's sports health (human, material, and financial resources) and elderly people's sports risk prevention and control insurance systems should be established, with a synergy between sports, medical care, elderly care, and communities. Amid the backdrop of demographic aging and active aging, the evolution and implementation of technology stand as crucial methods to foster proactive health strategies. Innovations like telemedicine, wearable gadgets, and AI health aides can bolster health surveillance and early warning systems, playing a significant role in early illness identification and treatment [13]. Particularly for the senior population in relatively remote locales, these technological tools can effectively transcend geographical constraints, facilitating access to superior medical services for the elderly [14]. Grounded on this foundation, it is essential to construct a protective system for the elderly's physical health (manpower, material, and financial resources) and risk prevention and control system for elderly exercise, harnessing the cooperative efforts of sports, healthcare, elderly care, and community sectors.

Lastly, the dissemination of scientific health knowledge fosters health-conscious behaviors amongst the elderly. Health-conscious behaviors encompass proactive actions undertaken by individuals to prevent disease and sustain health. These actions can include lifestyle modifications that curb health-detrimental habits, reduction or cessation of risky health behaviors such as smoking, heavy drinking, poor diet,

and unsafe practices, along with the adoption of positive health behaviors such as regular exercise, scheduled check-ups, and adherence to medical advice. Research suggests that health behavior interventions, underpinned by theoretical frameworks of behavior change, can effectively catalyze modifications in public health behaviors. For instance, the Transtheoretical Model (TTM) propounded by Prochaska and Velicer has been validated in numerous settings, including promoting physical activity among older adults [15, 16]. Furthermore, Bandura's social cognitive theory (SCT) provides a robust framework for devising interventions for health behavior changes [17, 18]. SCT-oriented interventions accentuate an individual's self efficacy—the confidence in their capability to execute and successfully alter behaviors. By amplifying the self efficacy of older adults, we can augment their propensity to engage in and sustain healthy behaviors. In 2019, the nation launched the "Healthy China Action Plan" and the "Healthy China Organization Action and Implementation Evaluation Plan". The issuance and enforcement of this "One Outline, Two Plans" approach are proactive, potent measures enacted by our nation in response to a cascade of health challenges arising from escalating societal aging. The aim is to continually ameliorate and elevate the health standards of the elderly through "proactive health" promotion. The execution of proactive health strategies necessitates the concerted efforts of all sectors and industries, inclusive of health departments, sports divisions, community services, education sectors, technology companies, medical establishments, and more. By breaking down conventional barriers and under the directive of proactive health strategies, all entities can leverage their strengths and collectively realize health management spanning all demographics and life stages.

6 Conclusion

To foster the execution of a "proactive health" strategy within the context of active aging, attention should be devoted to the following key areas:

1. Upholding the principle of prioritizing early intervention: This entails aiming to identify and address diseases during their nascent stages, thereby preventing their progression and reducing the burden on the health system as well as improving the quality of life for the aging population.

2. Adopting a dialectical view of population aging: This refers to interpreting the process of aging not merely as a challenge but also an opportunity. The perspective on elderly should be affirmative, recognizing their unique potential and contributions, rather than focusing solely on the health challenges and care needs associated with advanced age.

3. Establishing a proactive health environment and enhancing the "proactive health security system": It is imperative to creating an environment that supports and encourages proactive health behaviors. This can be achieved through the implementation of appropriate policies, regulations, and infrastructural development. Simultaneously, it is crucial to strengthen the proactive health security system to ensure accessible, affordable, and quality healthcare services for the elderly.

4. Promoting health literacy and healthy behaviors among the elderly through the scientific dissemination of health knowledge: Health education should be made accessible and easily understandable to the elderly. By providing them with accurate and easy-to-understand health information, they can make informed decisions about their health, which will ultimately contribute to their well-being and longevity.

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Author contributions

Huiru Wang: Conception and design of the study, acquisition of data, analysis and interpretation of data, drafting and final approval of the version to be published. Jiachen Liu: Critical revision of the article for important intellectual content, statistical analysis and interpretation of data, formatting adjustments and final approval of the version to be published.

Conflict of interests

The authors declare that they have no conflict of interest in relation to this research or its publication.

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