

From acute care to integrated chronic management: the role of medical enterprises in addressing healthcare resource pressures in an aging society

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Abstract. The ageing of population is becoming one of the most important changes in population structure during the twenty-first century and deeply challenging the current global medical system. Along with the decrease in fertility rate and the increase in average life expectancy, the proportion of the aged population is increasing rapidly, especially in developing countries like China. Compared with youth groups, aged populations would demand more medical service because it's easier to commit chronic diseases, have multiple diseases coexist and need long-term care. These factors lead to the demand for medical transform from short-term diseases treatment to long-term health management, making traditional medical systems which center on hospitals face increasingly bigger pressure on medical resources. This paper explores how population aging transforms healthcare demand and examines the limitations of conventional healthcare systems in responding to these demographic changes. It further analyzes the emerging role of medical enterprises in supporting healthcare delivery through digital health, telemedicine, home healthcare, and chronic disease management. Based on literature review and comparative analysis, this study argues that medical enterprises are evolving from suppliers of medical products into providers of integrated healthcare services. Although they cannot replace public healthcare systems, they have become an important complement in improving healthcare efficiency and alleviating healthcare resource pressure in aging societies.

Keywords: population aging, healthcare resources, medical enterprises, chronic disease management, digital health

1. Introduction

Population aging is becoming one of the most significant transformations of the twenty-first century. According to the World Health Organization (WHO), every country is experiencing a significant increase in the number and proportion of older people. By 2030, one in every six people will be aged 60 years or above worldwide, and the global population aged 60 and over is predicted to reach approximately 2.1 billion by 2050 [1]. These demographic changes create significant challenges for healthcare systems, particularly in countries where medical resources and workforce capacity are limited.

China is one of the most important cases to explore population aging. Driven by the decrease in fertility rate and the prolongation of average life expectancy, China is experiencing a rapid process of population aging. This change in population not only means an increase in the number of older adults but also an increase in the old-age dependency ratio, and it leads to increases in medical expenditure, demand for medical personnel, and long-term pressure on nursing services [2].

What is more important is that population aging not only means an increase in the need for medical services, Instead, it changes the nature of medical needs. Older populations are more likely to develop chronic diseases, and many diseases are age-related. These diseases cannot be treated immediately but require long-term monitoring, sustained medication, and constant health management [1]. Therefore, the medical system is changing from dealing with acute diseases to the pattern that focuses more on precaution, continuous nursing and health management.

However, traditional healthcare systems that center on hospitals is facing difficulties in responding to these changes. Hospitals were primarily designed for diagnosis and treatment of acute illnesses, while aging populations increasingly require continuous care beyond hospitals. This mismatch highlights the need for new healthcare models supported by digital technologies and integrated services [3].

In this regard, medical enterprises are assuming an ever-greater role as participants in the healthcare system. Medical enterprises do not only manufacture healthcare goods; nowadays, they offer such services as digital health, telehealth, remote monitoring, and chronic disease management. Such developments may contribute to increased efficiency in healthcare and alleviate pressure on existing healthcare systems.

This paper examines three research questions: how population aging transforms healthcare demand, why traditional healthcare systems face increasing challenges, and how medical enterprises can contribute to addressing healthcare resource pressure. Through literature review and comparative analysis, this study explores the evolving relationship between population aging, healthcare systems, and medical enterprises.

2. Population aging and the transformation of healthcare demand

Aging of the population has brought about significant changes in the structure of healthcare demand. In contrast with younger populations, whose healthcare requirements are usually connected to acute diseases or injuries, older people are more likely to suffer from several diseases at the same time and require constant healthcare. With the increase of life expectancy, sustaining good health is no longer connected with the treatment of specific diseases but rather with the management of physical and functional deterioration. This transition has become one of the defining characteristics of healthcare systems in aging societies [1].

2.1. From acute care to chronic disease management

Among the many impacts that arise from population aging is the fast increase of cases related to chronic illnesses. Chronic illnesses like high blood pressure, diabetes, heart diseases, osteoporosis, and dementia have become more common among aged people. Furthermore, multimorbidity is very common among older people since they may be affected by two or more chronic diseases at once. In these cases, it is necessary to monitor them, consult them, and give medications rather than one-time treatment [1].

This shift has radically transformed the pattern of health-care demand. The health-care system in the past was built primarily to diagnose and treat patients of diseases using one-off treatment at hospitals. Chronic diseases, however, need a coordinated effort among the above institutions over time. Therefore, health care is no longer a single act but rather a process. The Organisation for Economic Co-operation and Development

(OECD) explains how fragmented care negatively affects the efficiency and quality of health care provided to people suffering from chronic diseases [4].

2.2. Growing pressure on healthcare resources

Necessarily, the changing nature of demand for health care will put more strain on health care resources. For instance, there will be increased health care utilization by older people compared to the youth population. The elderly people will make more visits to clinics, stay in hospitals for a longer period, undergo more tests, and use more medicines. Secondly, there will be increased demand for long-term care facilities [1].

Second, demographic aging exacerbates the shortages of workforce in the healthcare systems [2]. The shrinking share of working-age adults leads to an inability to meet the growing demand for healthcare services due to a lack of a sufficient number of specialists in healthcare systems. Since the process of education of doctors, nurses and other health specialists is long-lasting, it takes time to develop the potential of healthcare systems to cope with the consequences of demographic aging.

In addition, spending on healthcare keeps rising for both governments and patients due to the increasing costs of managing chronic illnesses. In contrast with acute illness that is often short-lived and only entails a certain period of treatment, managing chronic illnesses entails consistent medication, regular check-ups, therapy, and monitoring over a long time [4].

2.3. Limitations of the traditional hospital-centered model

The growing burden of healthcare highlights several deficiencies inherent in the existing healthcare system based on hospitals. Traditionally, hospitals are structured to carry out diagnostic procedures, surgical operations, emergency treatments, and inpatient care. All of these are necessary but not sufficient for meeting the health needs of elderly patients [5].

Healthcare for older people must go beyond hospital settings. Healthcare for older people includes monitoring of chronic diseases, medication management, rehabilitation, nutritional advice, fall prevention, and help in everyday activities. All these services are provided much more effectively by means of coordinated primary care, community services, and home-based healthcare than by multiple hospitalizations. Thus, the World Health Organization promotes moving from disease-focused healthcare to person-centered integrated care, where coordination of healthcare services will be achieved not only within hospitals and clinics but also between communities and patients' homes [5].

Similarly, the OECD contends that care coordination models using technology can decrease care fragmentation, facilitate communications between healthcare professionals, and increase efficiency within healthcare systems. Telemedicine, electronic medical records, remote patient monitoring, and the Hospital-at-Home program have shown much promise in managing patients with chronic diseases while minimizing unnecessary hospital stays [4].

Thus, the problem posed by population aging is not just about the absence of hospitals and doctors. Rather, it has to do with the gap between growing demands in the healthcare sector and the traditional approach that the sector employs, which was initially aimed at addressing acute care. The solution of the gap will necessitate a shift in healthcare systems to more integrated approaches, which, in turn, will create prospects for medical businesses in the healthcare industry.

3. The emerging role of medical enterprises in an aging society

Traditional healthcare system based on hospitals has created opportunities for medical enterprises to be more involved in the provision of healthcare. Medical enterprises no longer limit themselves to producing medicines or devices; they have expanded their business into areas such as digital health, telehealth, patient telemonitoring, chronic condition management, and home healthcare services. This reflects the transition from product-based healthcare to the model which is oriented on patients as recommended by international organizations, like the World Health Organization (WHO) and the Organisation for Economic Co-operation and Development (OECD) [5, 6].

3.1. From medical product suppliers to healthcare service providers

Traditionally, the medical business has concentrated on either manufacturing or distributing pharmaceuticals, diagnostic equipment, or other medical devices. The contact between firms and patients has been indirect since only hospitals or healthcare professionals would use the product. The aging population has, however, brought about many changes to the health care demand, shifting it toward long-term services.

Consequently, many of the medical businesses have gradually started moving towards a more integrated way for health care. They are no longer limited to selling products but rather provide complete services, including chronic disease management, digital health apps, wearable monitoring devices, cloud-based healthcare information systems, and remote consultation services [6, 7].

The transition is part of an overall shift in the thoughts within the healthcare system. Instead of being focused purely on treating diseases, healthcare systems are increasingly concerned with disease prevention, patient involvement, and disease management.

3.2. Medical enterprises as a complement to traditional healthcare systems

Medical enterprises do not replace hospitals; instead, they complement existing healthcare systems by improving healthcare accessibility and efficiency.

One significant advancement in this regard is telemedicine. Through internet-based consultations and follow-ups, patients who suffer from stable chronic ailments can get proper advice without visiting the hospital. Telemedicine has become an integral part of healthcare delivery even after the COVID-19 pandemic, and now most countries include remote consultations as an essential part of their healthcare system. The use of telemedicine is still prevalent according to OECD due to its ability to make healthcare more accessible [7].

Another major contribution is the use of remote patient monitoring. Remote patient monitoring devices, wearable devices, smart blood pressure machines, glucose monitoring systems, and health applications help to provide patients' data to physicians in real-time. Early diagnosis and timely intervention by the physicians help to avoid conditions become worse, which helps in avoiding unnecessary hospitalizations. Remote patient monitoring tools are especially important for old people who always suffering from hypertension and diabetes among others [5].

The role played by medical enterprises is also becoming increasingly significant in digital health management. AI technology, electronic health records, and data analysis help physicians make better clinical decisions and minimize redundant testing. Both WHO and OECD stress that comprehensive digital health solutions enhance continuity of care and more effective resource allocation in healthcare [5, 6].

In summary, these advancements mean that the provision of healthcare services partially shifts from hospitals to home and community. This transition helps hospital allocated resources more effectively, provide

more services to patients who need specialized treatments and allowing stable patients can get continuously supports while at a low-cost.

3.3. Challenges and limitations

Despite medical enterprises' growing contribution, there are still some challenges that they must face.

First of all, digital inequalities persist as a key challenge. Older people often lack digital skills and have difficulties in using smartphone applications, telemedicine solutions, and wearables by themselves. According to the findings of OECD, older patients tend to feel less confident about using digital healthcare tools than younger users, limiting the effectiveness of digital healthcare tools [8].

Secondly, the topics regarding to data privacy and cybersecurity are becoming more and more important. The field of digital healthcare requires large volumes of collection, storage, and sharing of personal data. Therefore, securing patients' privacy and guaranteeing the use of patients' data is essential for maintaining public trust in health technologies [7].

Thirdly, healthcare is a public good with heavy social responsibility. Medical enterprises are primarily some businesses; they need to balance their business interests and those of their patients. Over-commercialization may result in inequities in access to healthcare services since more sophisticated digital healthcare services would only be provided to affluent people. Hence, proper government regulation and public-private partnerships are critical [6].

In summary, medical enterprises have become increasingly important participants in healthcare systems responding to population aging. Their greatest value lies not in replacing hospitals but in extending healthcare beyond hospital settings through digital technologies, integrated care, and continuous health management. However, maximizing these benefits requires coordinated efforts among governments, healthcare providers, technology companies, and patients to build a more equitable, efficient, and patient-centered healthcare system.

4. Conclusion

Population aging is not just a process of demographic change, but also a major challenge to the current system of healthcare delivery. With the rise in the number of elderly people, the need for healthcare services shifts from the temporary treatment of diseases to their constant management and prevention. This trend puts serious strain on the current model of healthcare, which was created mostly for acute cases.

This paper argues that the health care issues raised by population aging cannot be addressed through expansion of the hospital system and addition of more medical personnel. What is needed is restructuring the health care system in the direction of being more integrated and patient-oriented. Chronic diseases which are common among the elderly necessitate a health care provision outside hospitals and more at homes or communities.

Within this transformation, medical enterprises have become a major player in dealing with the problem of healthcare resource pressures. By using digital health technologies, telemedicine services, remote monitoring devices, artificial intelligence, and disease management services, medical companies may help improve access to healthcare and its efficiency while decreasing hospital pressure. Their role is evolving toward becoming healthcare solution providers rather than just medical product suppliers.

Nevertheless, medical enterprises need to be seen as a supplement, not a substitute, to the public health system. Problems like digital inequalities, privacy problems, financial concerns, and commercialization of

health care persist. Thus, cooperation of the government, hospitals, health care specialists, technology firms, and communities is needed to ensure innovation in health care for everyone.

In summary, population aging calls for a complete shift in the way healthcare is delivered. These medical enterprises have potential to become an important part in this transformation because they can provide chronic disease management, preventive care and integrated healthcare services. As the aging population grows, healthcare will no longer depend solely on treating diseases but also on building a sustainable system that allows older people to maintain health, independence, and quality of life.

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