



Contents lists available at ScienceDirect

Ageing Research Reviews

journal homepage: www.elsevier.com/locate/arr



Review

Aging Beijing: Challenges and strategies of health care for the elderly

Zheng Chen^{a,1}, Jia Yu^{a,b,1}, Yuetao Song^{a,*}, Dehua Chui^b

^a Beijing Geriatric Hospital, 118 Wenquan Road, Haidian District, 100095 Beijing China

^b Neuroscience Research Institute, Peking University Health Science Center, 38 Xueyuan Road, Haidian District, 100191 Beijing China

ARTICLE INFO

Article history:

Received 4 May 2010

Accepted 9 July 2010

Available online xxx

Keywords:

China

Geriatrics

Geriatric assessment

Healthcare policy

Human resource planning

ABSTRACT

Following the global trend of population aging, China became an aging society at the end of the 20th century. The ever-growing medical demands of the elderly, the lag in medical insurance policy, and the late development of geriatric services make the present situation of public health in China worrying. To meet these challenges, the Beijing municipal government has actively adjusted its development strategies and has been building up a medical service and healthcare system suitable for the elderly. The core of the system is a three-level management of geriatric diseases: prevention and treatment for chronic diseases, functional rehabilitation, long-term care, and family attendance at rural and urban community health service centers (stations); post-acute rehabilitation, long-term care, and palliative treatment in the specialized geriatric hospitals of every district (county); and rescue and treatment for acute and serious geriatric diseases in the geriatric sections of all general hospitals and Beijing Geriatric Hospital. By raising awareness and gaining support from all of society, the implementation of this system will benefit millions of elderly people and promote the sustainable financial development and social harmony of Beijing.

© 2010 Elsevier B.V. All rights reserved.

1. Population aging in Beijing

Since the implementation of its open-door policy and reforms in 1978, China has experienced rapid modernization and achieved great economic development and social progress. Meanwhile, the country faces another kind of growth: its aging population. China has a population of over 1.3 billion people, of whom 160 million are aged 60 and older; the largest aging population in the world. In addition, China's aging population is estimated to increase at a rate of 5.96 million per year from 2001 to 2020 and then 6.2 million per year from 2021 to 2050, and is expected to exceed 400 million by 2050, accounting for 30% of its total population (Kinsella and Wan, 2009; RNSA, 2010; Cusp, 2010; WHO, 2006). The city of Beijing became an aging society in 1990. By the end of 2008, the total population of Beijing had reached 12.3 million, with the number of people aged over 60, over 65, and over 80 being 2.18, 1.62, and 0.29 million, respectively, making up 17.7%, 13.2%, and 2.4% of the total population, respectively. The aging of the population has resulted in significant social consequences in Beijing (BMWCA, 2009).

2. Challenges related to geriatric medical services and healthcare in today's Beijing

2.1. Ever-increasing medical needs of an aging society

Aged patients account for 60% of emergency cases, 49% of hospital days, and 85% of long-term care beds. Among the elderly aged 65–74 years, 26% have a low-quality life due to chronic diseases. Among those aged over 75 years, two thirds suffer from three or more chronic diseases, nearly half have one or more functional disability, and 15% have drug related adverse events due to polypharmacy. Overall, 30% of the elderly at home and 50% of hospitalized elderly suffer from urinary incontinence, and 1% of the people over 75 years and 12% over 85 years are diagnosed as having senile dementia (DH, 2001; Tian, 1991a,b; CHR, 1994; Flaherty et al., 2007).

Geriatric syndromes, such as falls, chronic pain, depression, sleep disorders, pressure sores, osteoporosis, and movement disorders, have an ever-present impact on the confidence and dignity of elderly people.

2.2. Stagnation in the development of geriatrics and inadequate medical resources for aged patients

Geriatric medicine is still seriously misunderstood in China (Flaherty et al., 2007; Leng et al., 2008). It is generally assumed that every hospital is able to admit geriatric patients, and it is unnecessary to set up specialized geriatric hospitals. Aged people usually

* Corresponding author at: Institute for Geriatric Clinic and Rehabilitation, Beijing Geriatric Hospital, 118 Wenquan Road, Haidian District, 100095 Beijing, China. Tel.: +86 10 6240 2129; fax: +86 10 6240 2129.

E-mail address: syt521800@sohu.com (Y. Song).

¹ Z. Chen and J. Yu contributed equally to this work.

suffer from many kinds of diseases, cognitive impairment, and dysfunctions of sensation and movement, and they have established social values and cultural backgrounds (Manion, 1993; He et al., 2003; Li et al., 2006). For these reasons, geriatric medicine places an emphasis on the whole human body, not merely diseases. The special requirements of aged patients in treatment procedures, and medical facilities and services distinguish geriatrics from general medicine. In addition to the aim of prevention and treatment of disease, the medical services of a geriatric hospital emphasize psychological intervention, functional recovery, palliative treatment, and hospice care, embodying the new model of bio-psycho-social-environmental medicine.

Geriatrics has been slow to develop in China. In 2007, China's first geriatrics department was established in the Capital University of Medical Sciences. In fact, although geriatrics is the youngest subject of medical science, with a history of less than 100 years, it has become the third largest medical branch in developed countries such as the UK (Nascher, 1979). Geriatrics, by its very nature, is a multidisciplinary activity, covering gerontology, medicine, sociology, ethics, environmental sciences, and other areas. A wide gap still remains between China and developed Western countries in geriatrics education. In China, systematic training programs for geriatricians are few, while in Europe and North America, training in geriatrics has been in place for decades, with four-year courses in geriatrics or a two-year geriatric training course following completion of internal medicine training (Chodosh et al., 1997; Long, 1982; Murden, 1996; GME, 2004; AGS, 2005). Therefore, there is still a long way for China to go to promote the development of geriatric medicine.

China seriously lacks geriatric medical institutions, personnel, and related management and professional standards. The government has recognized the impact of population aging and has made some appropriate adjustments in public health policy. However, due to the scarcity of systematic geriatrics research and management, the attempt seems superficial. There is still no network of geriatric medical services covering family medical treatment, community services, geriatric sections in general hospitals, geriatric hospitals, and geriatric nursing centers. Even where geriatric hospitals have been set up, the management of care was inappropriate and did not focus on the needs of elderly patients. Some geriatric hospitals are engaged in pursuing profit, rather than focusing on the provision of professional medical services. Comprehensive sections or geriatric wards in general hospitals are set up for elderly patients with special needs. However, there are no standardized geriatric emergency treatment units in hospitals, long-term nursing homes, rehabilitation centers, or hospices. There is a lack of geriatric staff, especially nurses, rehabilitation therapists, clinical pharmacists, nutritionists, and psychotherapists. Moreover, no efficient linkage has been set up between geriatric medical-care institutions and social service institutions.

3. Lag in medical insurance policy and insufficient public awareness

The geriatric syndrome, geriatric rehabilitation, geriatric long-term care, and hospice care have become the main issues in geriatric medical care. According to statistics from the UK and USA, aged patients with multiple chronic diseases, which account for approximately 5–6% of all the patients suffering from chronic diseases, consume 42% of all hospitalization days and 33% of medical spending (Wolff et al., 2002; AAR, 2002; Mion, 2003). According to statistics from the Beijing Medical Insurance Department, medical expenses of the elderly account for 65–70% of total medical costs. Thus, the issues of medical care for aged people have resulted in heavy economic burdens to society and the family. It is a great challenge for the medical insurance system to extend

coverage to include the healthcare needs of the elderly without further increasing medical expenditures (Bloom and Gu, 1997; Blumenthal and Hsiao, 2005; Yip and Hsiao, 2008). In the USA, the highly market-oriented Medicare and Medicaid programs stipulate detailed management regulations related to healthcare for the elderly, covering long-term care, rehabilitation, and hospice care. China is trying to expand a basic medical insurance program, the New Rural Cooperative Medical System. It has enrolled 396 million farmers, 44.7% of the total rural population, as of September 2006, and is meant to be available to 80% of counties by the end of 2008 and to all counties by 2010 (Flaherty et al., 2007; Liu, 2004; NRMS, 2006). Promulgation of geriatric medical insurance focusing on rehabilitation and long-term care might help solve the problem of the difficulty and high cost of providing medical services for the elderly in China.

4. No specialized healthcare system for the elderly

China has relatively developed healthcare networks for women and children and a well-established system for infectious disease control and prevention throughout the country. However, there is no specially adapted healthcare system for the elderly. Aged people have to visit general hospitals, no matter how serious or mild the disease is, and they follow the same procedures as other adult patients. The complicated procedures and repeated costs may delay diagnosis and treatment for elderly and increase their medical expenditures. Additionally, because most hospitals do not have a geriatrics section, elderly patients with multiple diseases have to visit several departments and receive various diagnosis and treatment. This increases the risk of polypharmacy and iatrogenic diseases. Furthermore, current geriatric emergency treatment in Beijing is relatively well developed and complete, but the importance of post-acute, subacute, rehabilitation, long-term care, and hospice care has not yet received sufficient consideration. Lack of effective linkages and an information sharing system among different medical institutions means elderly patients undergo repetitive examinations and miss ideal treatment opportunities. This inevitably leads to an excessive waste of public health resources and puts the government into the plight of losing the ability to achieve complete control and make effective decisions.

5. Construction of the Beijing healthcare system for the elderly

It is time that public health in China takes a serious interest in the problems of aging. Healthcare for the elderly should be an essential part of the basic medical service, focusing on health promotion, chronic disease treatment, rehabilitation, long-term care, and hospice care. Medical services for the elderly in China are faced with an unprecedented challenge and a rare opportunity, which will have a profound influence on sustainable financial development and social harmony. Therefore, it is imperative and urgent to establish a healthcare system for the elderly.

To meet these requirements, the Beijing municipal government has been building up a geriatrics medical service and healthcare system. Developing and implementing the criteria of comprehensive geriatric assessment, the guidelines for treatment and rehabilitation of geriatric diseases, and the referral network among different medical institutions is underway. The network of geriatric disease prevention and control has three levels: the foundation is prevention and treatment for chronic disease, functional rehabilitation, long-term care, and family attendance at rural and urban community health service centers (stations); the mainstay is post-acute rehabilitation, long-term care, and palliative treatment in the specialized geriatric hospitals of every district (county); and the support is rescue and treatment for grave and serious geriatric dis-

eases in the geriatric sections of all general hospitals and Beijing Geriatric Hospital. With the interest and support from all of society, the implementation of this system will benefit millions of elderly people in Beijing.

The main content and framework of the Beijing healthcare system for the elderly are as follows:

5.1. Functional management structure

The functional management structure is the fundamental part of the healthcare system, in charge of overall planning, implementation, and management. Technically, they are responsible for formulating policy and laws, control and coordination, and assessment and supervision of the performance of the system. Governments at all levels have no special functional departments in charge of healthcare for the elderly. To meet the health needs of the aging society, it is necessary for China to establish specialized geriatric management departments as soon as possible, such as geriatric divisions, geriatric sections, and geriatric offices.

5.2. Institution of medical services and health care at various levels

Medical and healthcare institutions are the principal parts of the system, mainly in charge of health promotion, disease prevention and control, rehabilitation of chronic disease, long-term follow-up, and hospice care. For medical institutions at various levels, their functional limitations and standards of diagnosis and treatment should be strictly defined. Moreover, their service patterns and procedures of diagnosis and treatment should be redesigned to make it easy for the elderly to receive medical care. Geriatric sections should be set up in tertiary general hospitals. A geriatric disease hospital and several geriatric healthcare centers should be built in each district (county) of Beijing. The original primary care medical institutions should be converted into nursing centers with 30–100 beds. Other secondary care hospitals should be rebuilt into specialized geriatric institutions such as rehabilitation centers, geriatric psychiatric hospitals, and skill nursing centers. Nonprofit and non-governmental organizations are encouraged to provide geriatric medical services.

5.2.1. Basic functions of medical and healthcare institutions at various levels

5.2.1.1. *Beijing geriatric hospital undertakes:* Emergency treatment and first aid of elderly patients; diagnosis and treatment of geriatric syndrome and multiple organ dysfunction; functional recovery of post-acute, subacute, and chronic diseases; long-term follow-up for disabled aged patients; relief treatment and hospice care for the elderly; as the center of teaching, training, and scientific research of geriatric medicine in Beijing.

5.2.1.2. *Geriatric hospitals of districts and counties undertake:* Day-time care and rehabilitative treatment; sending multidisciplinary teams to work directly in communities.

5.2.1.3. *Geriatric sections of general hospitals undertake:* Emergency treatment and rescue for aged patients; diagnosis and treatment of difficult and complicated diseases.

5.2.1.4. *Geriatric rehabilitation centers provide:* Professional recovery treatment and rehabilitation training for elderly patients suffering from psychiatric diseases, dementia, and movement disorders.

5.2.1.5. *Geriatric nursing centers provide:* Professional long-term care for the elderly, including advanced nursing (for patients undergoing dialysis or bed sore treatment, or patients with long-term drainage tubes, nasal feeding tubes, catheters), and general nursing

(regular treatment and life care for dementia patients and physically disabled people).

5.2.1.6. *Hospice centers provide:* Relief treatment for patients suffering from incurable diseases or at the end of life.

5.2.1.7. *Healthcare centers (stations) in communities undertake:* Health education, prevention and health care; control for chronic diseases; daytime recovery and family attendance; integrated health assessment and referral. Communities should be gradually equipped with geriatric doctors, rehabilitators, professional nurses, and social workers to deliver medical services in patients' homes, including long-term follow-up and hospice care.

5.3. Geriatric human resources

Development of the discipline and health human resource training is a vital component of the healthcare system. Human resources consist of managers, clinical geriatric specialists, community general practitioners, nurses and caregivers, and scientific geriatrics researchers. The physiological, pathological, and psychological features of the elderly make their diagnosis and treatment more difficult and complicated. This requires geriatricians with multidisciplinary knowledge about gerontology, psychology, psychiatry, sociology, ethics, environmental science, law, and other fields. Accordingly, the focus of geriatrics education and training should be adjusted to keep pace with the times. Geriatricians should focus on the people, regard the body-mind-spirit of the elderly as an integral whole, and direct the therapeutic purpose toward not only the cure of a disease, but also the maintenance and recovery of organic function and the improvement of quality of life.

5.4. Health information database for the elderly

Health and disease information of the elderly should be collected and stored in the Beijing Geriatrics Database. Information management and sharing using this unified platform will significantly improve the service quality and efficiency of various medical institutions, will facilitate dynamic monitoring of the health status of elderly residents, and prompt adjustments to public health policy by the government. The elderly should be issued universal medical benefit cards covering major hospitals and communities. Medical services at all places shall give priority in consultation and treatment to persons possessing such cards. In addition, the Beijing geriatric health website has been built up to provide health education and telemedicine information to the elderly and establish an effective communication channel between geriatrics professionals and aged patients.

5.5. Health support network

Geriatrics-related nongovernmental organizations and academic institutions, such as geriatric institutes, geriatric associations, the Society of Geriatric Medicine, the Society of Geriatric Rehabilitation, and the End of Life Care Society, play an auxiliary role in the Beijing healthcare system for the elderly and constitute the support network, in charge of the development and implementation of specific geriatric training programs for primary care practitioners, other healthcare providers and informal family caregivers.

6. Conclusions and prospects

To cope with the challenge of population aging and solve the problems of the difficulty in providing medical services and their high costs, the Beijing municipal government implemented a series of measures. In 2001, one tertiary care hospital (the forerunner of Beijing Geriatric Hospital) and four secondary care hospitals were

rebuilt into geriatric hospitals. During the 11th five-year period of China, a geriatric hospital was established in each district (county). Many general hospitals have set up a geriatric section or comprehensive ward. Increasing numbers of privately run nursing homes and hospice centers are open to the public. Furthermore, geriatric medical and hospice associations are formulating relevant standards and criteria for treatment and nursing in geriatric medicine. The affiliation of Beijing Geriatric Hospital, Capital University of Medical Sciences, and Beijing University of Traditional Chinese Medicine promotes the organic combination of clinical practice and basic research in geriatrics. Moreover, the establishment of a geriatrics department in the Capital University of Medical Sciences permits exciting advancements in this discipline.

The improvement of the geriatric healthcare system is a long-term and arduous task. It entails the vigorous support of governments at all levels and the active participation of all of society. Specific measures are as follows:

1. The government should pay due attention, make comprehensive plans, and give more effective leadership to the healthcare system for the elderly.
2. More funds should be raised from multiple sources, whether government or private, to ensure adequate financing for the healthcare system for the elderly. Meanwhile, it is necessary to strengthen the supervision and control of the investment in order to achieve better social benefits.
3. The media, including radio, television, newspapers, and internet, should give wide coverage of the healthcare system for the elderly to raise awareness among the general public and healthcare workers. The elderly should be educated about healthy aging and guided to foster the appropriate outlook on life and death. Publicity and education should be intensified to enhance the social consciousness of respecting and helping the elderly, and carry forward the traditional Chinese culture of filial piety. Traditionally, younger family members take care of and fulfill their filial duty to older adults. Unfortunately, recent socioeconomic and family structural changes have made this traditional family support unsustainable (ACC, 2010; Liu and Liu, 1996; Sun, 1998).
4. Geriatric medical institutions should equip themselves with the necessary advanced medical and examining facilities, as well as with dedicated and experienced staff. Meanwhile, medical facilities to serve the elderly, including the outpatient, emergency, and inpatient departments should be improved to easy access for the elderly.
5. It is imperative to institute a suite of scientific and rational assessment rules to ensure the long-term stability and continuous improvement of the healthcare system for the elderly.

Conflict of interest statement

The authors declare no conflict of interest.

Role of the funding source

This work was supported by the Capital Medical Development Scientific Research Foundation (Grant No. 2005–3048).

References

Alliance for Aging Research, 2002. Medical never-never land: Ten reasons why America is not ready for the coming age boom. Washington: Alliance for Aging Research. Available at www.agingresearch.org/advocacy/geriatrics/02016.aar_geriatrics_text.pdf (accessed 06.07.02).

- Aging in Contemporary China [on-line, English version]. Available at <http://www.chinainstitute.org/educators/curriculum/aging/introduction.html> (accessed March 2010).
- Core Writing Group of the Task Force on the Future of Geriatric Medicine, 2005. Caring for older Americans: the future of geriatric medicine. *J. Am. Geriatr. Soc.* 53 (6 Suppl.), S245–S256.
- Bloom, G., Gu, X., 1997. Health sector reform: lessons from China. *Soc. Sci. Med.* 45, 351–360.
- Blumenthal, D., Hsiao, W., 2005. Privatization and its discontents – the evolving Chinese health care system. *N. Engl. J. Med.* 353, 1165–1170.
- Beijing Municipal Working Commission on Aging, 2009. Report of aging population information and aging course development in Beijing 2008. Available at <http://www.laoling.com/yanjiu/UploadFiles/200910/20091028210812627.doc>.
- China Research Center on Aging, 1994. Data Compilation of the Survey on China's Support for the Elderly. Huling Press, Beijing, China.
- Chodosh, J., Katz, P.R., Kochersberger, G., Hall, W.J., 1997. Can internal medicine residents be better prepared to care for their older patients? *Gerontol. Geriatr. Educ.* 18, 3–11.
- Comprehensive and Unique Approach to Solve the Population Issues of China. Available at <http://www.gov.cn/wszb/zhibo275/content.1128255.htm> (accessed March 2010).
- Department of Health, March 2001. National Service Framework for Older People. Available at http://www.aop.org.uk/uploaded_files/nsf-olderpersons.pdf.
- Flaherty, J.H., Liu, M.L., Ding, L., Dong, B., Ding, Q., et al., 2007. China: the aging giant. *J. Am. Geriatr. Soc.* 55, 1295–1300.
- Accreditation Council for Graduate Medical Education, 2004. Residency review committees common program requirements. Available at <http://www.acgme.org> (accessed 02.12.04).
- He, Y., Chang, Q., Huang, J.Y., Jiang, Y., Shi, Q.L., et al., 2003. Study on mortality, incidence and risk factors of stroke in a cohort of elderly in Xi'an, China. *Chin. J. Epidemiol.* 24, 476–479.
- Kinsella, K., Wan, H., 2009. The U.S. Census Bureau, International Population Reports, P95/09-1: An Aging World: 2008. Washington, DC, U.S. Government Printing Office.
- Leng, S.X., Tian, X.P., Durso, S., Lazarus, G., Lu, C., et al., 2008. The aging population and development of geriatrics in China. *J. Am. Geriatr. Soc.* 56, 571–573.
- Li, Y.F., Cao, J., Fan, L., Bu, C.Y., Li, X., et al., 2006. Prevalence of isolated systolic hypertension and analysis on its relative factors in 1002 cases over 80 years old in retirement centers for army officers. *Chin. Med. J. (Engl.)* 119, 1473–1476.
- Long, C.C., 1982. Design and evolution of a geriatric curriculum for family medicine residents. *Gerontol. Geriatr. Educ.* 2, 219–225.
- Liu, Y., 2004. Development of the rural health insurance system in China. *Health Policy Plan.* 19, 159–165.
- Liu, H., Liu, Y., 1996. Only one-child and the marriage structure in the future. *Chin. J. Popul. Sci.* 8, 395–402.
- Manion, M., 1993. Retirement of Revolutionaries in China: Public Policies, Social Norms, Private Interests. Princeton University Press, Princeton, NJ.
- L. Mion, Care Provision for Older Adults: Who Will Provide? Online Journal of Issues in Nursing 8, No.2 (2003) Manuscript 3. Available at <http://www.nursingworld.org/MainMenuCategories/ANAMarketplace/ANAPeriodicals/OJIN/TableofContents/Volume82003/No2May2003/CareProvisionforOlderAdults.aspx>.
- Murden, R.A., 1996. Teaching geriatrics to medical residents [Letter]. *J. Gen. Intern. Med.* 11, 776.
- Nascher, I.L., 1979. Geriatrics: The Diseases of Old Age and Their Treatment. Arno Press, New York.
- New Rural Medical System Welcomed by Farmers [on-line]. Available at <http://en.ce.cn/National/Politics/200609/28/t20060928.8762274.shtml> (accessed 20.10.06).
- The Report on the National Survey of Aging Population Distribution in the Urban and Rural Area of China (complete version). Available at <http://www.cnca.org.cn> (accessed March 2010).
- Sun, F., 1998. Ageing of the population in China: trends and implications. *Asia. Pac. Popul. J.* 13, 75–92.
- Tian, X., 1991a. Chinese Aging Society: A National Survey of the Elderly. China Economic Press, Beijing.
- Tian, X., 1991b. Economics of the Chinese Aging Population. Chinese Economic Press, Beijing.
- The World Health Organization: China. Available at <http://www.who.int/countries/chn/en> (accessed December 2006).
- Wolff, J.L., Starfield, B., Anderson, G., 2002. Prevalence, expenditures, and complications of multiple chronic conditions in the elderly. *Arch. Int. Med.* 162, 2269–2276.
- Yip, W., Hsiao, W.C., 2008. The Chinese health system at a crossroads: a new infusion of government funds has sparked debate in China about how best to transform money into effective services. *Health Aff.* 27, 460–468.