

Alzheimer's Disease and Dementia, Under-Recognized Public Health Crisis in China

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Abstract

Exponential rise in aging population in China projects that the country will be facing an upsurge in the dementia population in next few decades. It is pertinent to improve public knowledge through better understanding of the epidemiology, impact on financial and health system and family, and intervention strategies. This review was conducted to collect Chinese journal publications, government policies, and project documents of Alzheimer's or dementia over past two decades, as well as to consult Chinese psychiatrists and neurologists with expertise in the field. The results showed that the emerging prevalence of dementia in China is rising far faster than thought, and it has been imposing tremendous challenge to the health and financial system, as well as the community and family members. However, the public awareness is poor, basic and clinical researches are paucity, national supportive strategies are lacking, and the availability of social benefit is inadequate.

Keywords: Alzheimer's disease; Dementia; Epidemic; Aging population; China

Introduction

Alzheimer's disease (AD) is the most common cause of dementia in people aged 60 years and older, accounting for an estimated 60 to 80% of dementia cases [1]. Other types include vascular dementia, dementia with Lewy bodies, and frontotemporal dementia. AD has several known risk factors, encompassing genetics, metabolic disorders, and mental health issues, but disease risk primarily increases with age, almost doubling every five years after one reaches 65 [1]. More than 13% of individuals aged 65 years and older, and 40 to 50% aged 80 years and older have AD [1]. China has the largest older population in the world today and will age much more rapidly than western countries in the near future. The number of population aged 65 and older reached 128 million in 2010 [2]. It will rapidly grow to 200 million in 2017 with the first wave of the baby boomers reaching 65. By 2040, the total number of China's 65 and above population will reach 300 million [2]. The fast increase in elderly population in China is inevitably accompanied by a sharpest increase in the prevalence of AD stigma and other dementia. Moreover, today in China, there are about 10 million "shidu" families, the term for parents that have lost their only child, a number that grows by about 76,000 each year according to the demographers estimate [3].

Worldwide, 35.6 million people were estimated to be living with dementia in 2010, with 7.7 million new cases each year; 115.4 million people are expected to have dementia in 2050, more than 70% of them in low or middle income countries [4]. National reports in both the US and the UK indicate that Alzheimer's and dementia are among the most feared diseases associated with getting older. The fear of getting a dementia diagnosis is greater than the fear of developing cancer, heart disease, diabetes or stroke [5]. Dementia also affects younger generations as they struggle to meet the care needs of their elders,

substantially compromising younger family members' time, quality of life, and even productivity in the work place. Because of their impact, Alzheimer's and dementia in general are personal, family, and social diseases that demand urgent, new, and innovative ways of addressing them. Despite the lack of disease-modifying therapies [6], studies have consistently shown that active medical management of Alzheimer's and other dementia can significantly improve quality of life through all stages of the disease for individuals with dementia and their caregivers [1,6]. Thus it is important that societies are prepared to address the social and economic burden caused by dementia, and to provide comprehensive strategies to help people with dementing illnesses and their care partners at each stage.

World Health Organization (WHO) and Alzheimer's disease International (ADI) recommend that every country should have a national dementia strategy, promoting early diagnosis and intervention, raising public awareness about the disease and reducing stigma; and providing better care and more support to caregivers [4,5]. China has recognized that dementia will be a significant problem associated with its aging population, but current initiatives will have to be scaled up fast to meet growing demand. In this article, China's current situation and future prospects with regard to social and public health challenges of AD and dementia have been discussed, by drawing heavily upon the prevalence, impact on family and society, national and clinical capacity, public awareness, and challenge of provision care. This work will contribute to understanding the status of China's dementia problem and the dilemmas in meeting their health care needs.

Materials and Methods

We performed a desk review of Chinese journal publications on Alzheimer's and dementia. In brief, we developed a comprehensive search strategy for different categories using a combination of text words and the indexing terms (MeSH) in PubMed, China National

Knowledge Infrastructure, Wanfang databases over last two decades. To obtain the information relevant to prevalence or incidence of Alzheimer's and dementia, we used the keywords "Prevalence" or "Epidemiology" or "Incidence" and "Dementia" or "Alzheimer's" or "Mild cognitive impairment". To assess public awareness, we used words "Awareness" and "Dementia" or "Alzheimer's" or "Mild cognitive impairment". For public awareness-raising campaigns, we used words "Awareness" and "Dementia" or "Alzheimer's" and "campaigns". Chinese journal publications were defined as having been conducted with a Chinese sample (even if none of the authors were based in China at time of publication) or as having at least one author based at a Chinese institute. Book reviews, editorial introductions, errata, overviews of conference proceedings and abstracts were excluded from the publications reviewed.

Information on the current cost of disease for dementia and Alzheimer's was obtained from the most recent Chinese Health Statistics Yearbook [3]. In addition, we also searched for Chinese journal publications using the terms "cost" or "financial impact" or "economic burden" and "Alzheimer's" or "Dementia". The current and projected direct costs of care for dementia were identified from the published literature, when available. Information on the indirect cost of care was also collected from published literature, when available. In order to study the care burden of dementia, we used the search terms "Dementia" or "Alzheimer's" and "Carers" or "caregivers" or "long term care" and "Burden" or "psychology". "Carers" is to refer to research relating specifically to carers of persons with dementia.

In order to evaluate the government strategies, we searched available Chinese government policies and project documents regarding to Alzheimer's or dementia over the past two decades. We consulted Chinese psychiatrists and neurologists with expertise in the field if detailed information was not available. We also searched the Medline and CNKI and Wanfang database using the terms "Alzheimer's" or "Dementia" or "prevention" or "control" and "China".

Data on Chinese Government research funding for dementia between 2000 and 2012 were obtained from datasets on funded grants from the National Nature Science Foundation of China websites.

Results

China faces increasing numbers of Alzheimer's and dementia patients

So far there is not a national estimate of the burden of dementia in China. The Chinese committee for ADI estimated that China had more than 6.4 million AD patients in 2009 [7]. A most recent estimation based on the internationally-recognised diagnose reported that China had about 9.19 million people living with dementia in 2010, 5.69 million of whom had AD [8]. This study claimed by its authors is the first large-scale systematic analysis of the epidemiology of AD and other forms of dementia in a low-income or middle-income setting [8]. Numbers given by this study surpassed previous estimations [9-11] and gave China the unenviable title of the world leader in terms of the population of dementia and Alzheimer's patients. However, it might underestimate the true burden of AD and dementia. Although it claimed to be a most detailed estimation, evidences it based were 89 public health studies [8], which were far from well-planned, representative epidemiological surveys in China. China's Alzheimer's

Project (CAP) estimates that 75% of urban patients have not been diagnosed in a timely way. The proportion of those not diagnosed in rural areas is probably higher. Indeed, 65% of older Chinese adults live in rural areas [2]. Extrapolated statistics (not based on data sources from individual countries) of AD in China was 9.1 million in 2010 [12]. The possible Alzheimer's patients today probably are much more than previous estimations.

Table 1 shows that projected numbers of people age 65 and over in China and population with AD using World Population Prospects 2008. Between now and 2050, China probably experience a dramatic increase in the number of its citizens with AD. Besides the prevalence data, we know little about incidence and predictors of dementia in China either. Assuming that incidence will increase in line with prevalence, since aging population is driving both numbers. The WHO Dementia Report estimates one new case every four seconds [3]. By 2050 China will have 14.61 to 23.28 million new cases of AD on top of the current 9.1 to 14.30 million according to different prospects (Table 1). This does not include the increase in the number of people with other forms of dementia and mild cognitive impairment.

Year	Population (million) ^a	65+	Population with AD (million) ^b	Population with AD (million) ^c
2010	110.0		14.30	9.10
2015	131.2		17.06	10.89
2020	163.2		21.22	13.38
2025	187.5		24.38	15.38
2030	220.8		28.70	18.11
2035	263.2		34.22	21.58
2040	291.0		37.83	23.86
2045	290.9		37.82	23.53
2050	289.1		37.58	23.71

^aThe estimated numbers for people over 65 come from World Population Prospects: The 2008 Revision.

^bExtrapolated statistics of AD was based on the rate provided by Alzheimer's Association 2013.

^cExtrapolated statistics of AD was based on various prevalence or incidence rates against the populations of a particular country or region.

Table 1: Projected numbers of people age 65 and over in China and people with Alzheimer's disease using World Population Prospects 2008.

Low public awareness of AD and dementia in China

Despite the huge increase in the rate of AD and dementia in China, the social awareness and necessary knowledge of treatment and care of Alzheimer's patients are generally lacking. The associated literatures regarding the public awareness in China are lacking. We found only 4 eligible studies in this regard. The study carried out in the most developed city Shanghai concluded that most people are lack of correct knowledge about dementia, and discrimination of dementia is highly prevalent among urban residents [13]. In Hong Kong, only 30% of those with mild dementia and 64.3% of those with moderate dementia were known to have dementia by the homes [14]. Another survey found that 48.8% of caregivers considered the impairment of

cognition, behavior, and daily living activity in demented persons as a result of normal aging [15]. A cross-sectional population-based survey found that frequency of unawareness of memory impairment in dementia was 63% in China [16]. Due to such widespread ignorance, 98% families who have Alzheimer's patients at home fail to percept their early signs and take their elderly family members to the hospital for timely treatment [17]. Misunderstanding contributes to the social isolation and discrimination of both the person with dementia and their caregivers, and has led to delays in seeking diagnosis, health assistance, and social support. With such a low awareness of this emerging public health problem, earlier studies probably underestimated dementia prevalence in this country.

The collective key areas of lack of public awareness in China are summarized in panel 1.

Panel 1: Key areas of lack of public awareness in China

1. A widespread lack of awareness of dementia—including its scale, the early signs, symptoms, and impact on society and families.
2. A number of misunderstandings about dementia—including the misconceptions that it is a natural part of aging, that it only affects older people, so dementia symptoms are not seen as a medical problem requiring help, and that nothing can be done to help people live well with it.
3. People do not understand the difference between AD and dementia, and may not be aware of other forms of dementia.
4. People are not aware of the risk factors for dementia, and often do not believe they can do anything to reduce their risk.

5. The general public does not feel comfortable relating to people with dementia, which leads to people with dementia feeling isolated or losing friends.

Economic burden of Alzheimer's and dementia

The national economic burden of dementia is difficult to estimate with few available data resource. One survey published in 2008 estimated that direct cost per patient per year averaged approximately 8 432 RMB (1 058 USD), and indirect cost per patient per year was 10 568 RMB (1 326 USD), and annual costs were 19 001 RMB (2 384 USD) per patient per year [18]. China's total health expenditure was 1998.04 billion RMB (319.69 billion USD) in 2010 [19]. It is estimated that the senile dementia extracts a total annual economic loss of 83.5 billion RMB (13.36 billion USD) - 97.4 billion RMB (15.7 billion USD) [20]. This estimation accounts for a fraction of the total costs and may omit the unpaid costs borne by caregivers. Informal care accounts for the majority of total costs in china, since direct social care costs are negligible.

National and clinical capacity of Alzheimer's and dementia

Table 2 shows the national capacity of AD and dementia. There are no state-level public health projects for prevention of AD or dementia (Table 2). State-level public health system is not in place to deal with dementia, and no long-term care insurance in China either. Commercial insurances don't cover the disease or non-hospital nursing care. Nongovernment organization and nonprofit organization are in small scale.

Insurance	Access and availability
Government insurances	Quality and access are low
Long-term care insurances	None
Commercial insurances	Don't cover AD or dementia
Social insurance programs	Not related to dementia care
The New Rural Co-operative Medical Care System (Started in 2003)	Doesn't cover AD or dementia except patients are hospitalized

Table 2: The health system targeting Alzheimer's and dementia in China

The medical facilities for diagnosing and treating senile dementia are located at a few of top hospitals. At present, only the 1st Top 3 hospitals can provide comprehensive diagnosis and treatment for AD patients, which means only 881 hospitals can fit in this role [3]. Less than 80 hospitals established specialized Memory Disorder Clinic. There are no community health service centers available to provide preliminary screening for patients with cognitive disorders. Existing eldercare institutions can serve less than 1.2% of the aging population, compared with 8-10% in developed countries [21]. Community health service centers do not have the possibility of providing long term care and special nursing care for patients with dementia. Shanghai has just developed plans to build new facilities to take care of the dementia there.

There is also serious shortage of experienced physicians nationwide. The detailed information regarding the clinical capacity is summarized in Table 3. China has 17 000 certified psychologists, which are 10% of

that of other developed countries per capita [22]. There are 19472 mental health professionals, 300 of them estimated had qualified training [6]. The doctors and nurses work at community hospitals are not able to perform early screening of dementia [23]. Thus, most people in China with Alzheimer's have no insurance or professional help.

The CAP estimates that 75% of urban patients have not been diagnosed in a timely way. When a diagnosis is made, it often comes at a relatively late stage of the disease. The proportion of those not diagnosed in rural areas is probably higher. Meanwhile, prevention and treatment of dementia in eastern part and western part of China differs a lot. Take Shanghai, whose aging situation is the most serious in China, as an example, the hospital visit rate reached 41.1% in 2007, only 21.3% of the patients have taken medicines [24]. However in Xi'an, the central city of Western China, the rate only hit 2.3% in 2007 [24].

Characteristics	Values
1 st Tertiary hospitals	881 [6]
Memory clinic	80
Eldercare institutions	Served for 1.2% aging [21]
Community health service centers	No dementia related services
Primary care screening	None
Registered doctors/1000 population (2011)	1.49 [6]
Nurses/1000 population (2011)	1.66 [6]
Community health workers/1000 population (2011)	0.32 [6]
17000 Certified psychologists (2007) [2]	10% of that of other developed countries per capita
19472 Mental health professionals (2011) (300 of them with qualified training) [6]	1 per 72,000

Table 3: Clinical characteristics and values in China

Challenges in provision of care

The high levels of burden and psychological morbidity are poorly documented in China. We identified 1401 abstracts but only five previous studies were from mainland China. Based on these survey and expert's interview we could see that most patients (96%) were cared at home by family caregivers [25]; among caregivers, 57% were females, 52% were patients' spouses, and 67.3% had been caring for patients for 1 year or more [26]. Half of the caregivers spend 8+ hours each day on caregiving [23]. The mean total caregiver Zarit Burden Interview score was high [27]. The main four influence factors of the caring burden were length of daily caring hours, source of care receivers' medical expenses, patient with physical disability, and care providers' role awareness (i.e., obligated vs. willing) [27]. Therefore, Chinese family caregivers suffer persistent hardships, stress, reactions of caring, or as the physical and psychological, financial, and social problems, just same as their counterparts in US and European have [26]. Rural people with dementia have the added problem of diminishing care by supportive relatives, many of whom have to migrate to urban areas through urbanization process. As a result, many family and other unpaid caregivers experience high levels of emotional stress and physical health problems. There are probably no other diseases that involve families so much or have such devastating effects like dementia. However this has not been widely acknowledged. So development of services to assist caregivers in their role has been slow. Compensatory financial support was lacking and 80% received no formal support [28].

If AD and dementia are a nationwide epidemic, women are at the epicenter of it. Women are more than twice as likely as men of a similar age to develop late-onset AD, especially those taking estrogen

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Funding	128	665	533	1037	845	1152	1024	1264	1232	2704

Table 4: Funding provided to Alzheimer's study by National Nature Science Foundation of China, 2003–2012 (Unit: in thousand USD)

Table 4 shows that annual research funding for dementia provided by National Nature Science Foundation of China between 2003 and 2012. Dementia received the small amount of government research funding, which is extremely lower than that in developed countries [3].

and progesterone years after menopause are at greater risk of developing dementia [29]. In China, more women developed dementia than men, even after controlling for age, and those results held across rural and urban patterns for Alzheimer's and dementia [8]. This has major implications for health policy, as women's life expectancy (79 in 2010) in China is greater than men (73 in 2010) and comprise up to 75 percent of the population aged 85 years or older. In addition, women are also more likely than men to be caregivers for someone with the disease as the traditional role women have in China. The proportion of female caregivers was 78% according to a survey [30]. Unpaid women caregivers are on the frontlines of battle against AD and dementia. Thus, dementia is a women's disease.

Researches related to AD and dementia

There is not much research information regarding AD and dementia in China available in the international literature. We found 317 publications when searched using "Alzheimer disease" and "china" in Pubmed. Although there are some studies on the biochemistry, genetics, psychopathology, neurophysiology, and drug treatment in dementia (collectively accounting for 89.6%), current epidemiological studies of dementia in China are paucity (accounting for 1.75%), problematic, and inconsistent. Available data of prevalence studies are mostly small-sample-size, and single-center study. There are no national dementia epidemiological studies in nearly 10 years, neither case-control study with high-quality, nor intervention studies. Therefore, there is an urgent need to carry out epidemiological studies for high levels of prevalence and morbidity study, long-term and stable cohort study, and design reasonable pathology studies and large sample intervention study.

Thus research funding for dementia must be increased so that the science community can continue investigating areas of strength and address research gaps in service delivery and prevention. In addition, state-public health research projects for the prevention of Alzheimer's

are lacking. Nationwide training courses, workshops, seminars, and case reports with pathological discussion are sporadic.

Cities across China are providing certain financial aid to senior citizens who have lost their only child

Most people who have lost their only child have a low or middle income, and some of them have to live frugally in order to support themselves in old age. China's Population and Family Planning Law, implemented in 2002 by the National People's Congress, stipulated that local governments provide necessary assistance to families whose only child was accidentally injured or killed on the condition that the parents do not adopt or give birth to another one. In Beijing, for example, couples who lose their only child will receive 400 RMB every month when the mother reaches 49 years old. When the mother reaches 55 and the father 60, they will receive a one-time subsidy of more than 5 000 RMB. For couples whose only child is disabled, they will receive 320 RMB every month when the mother reaches 49. However, the central government neither specified how much was necessary nor clarified its role in such compensation cases. Therefore childless parents are at the whim of local governments, which often base compensation on their financial resources instead of the family's actual needs.

Financial assistance can solve some problems, but what Sidu-family really need is spiritual help. Most people who have lost their only child tend to keep silent about the "secret" and isolate themselves from the society. Many old people have called for the establishment of special nursing homes and associations that can arrange for them to travel and spend holidays and festivals together. China plans to provide 6.6 million beds in nursing homes for the country's elderly by the end of 2015, increasing the number of beds for every 1 000 senior citizens from the current 19 to 30. Authorities are also considering encouraging private investment in this system by providing preferential policies in terms of taxation, land usage and water and power supplies for private-run nursing institutions, according to the vice-minister.

Discussion

The most serious problem in China in the aging process is the rapid increase of seniors with Alzheimer's and related dementia. Our study demonstrates that the prevalence of dementia in China is rising far faster than thought and it has been imposing tremendous challenge to social and public health system, as well as the community and family members. Based on the demographics of China, the impact of AD and other dementia have been increasing dramatically (Table 1). Moreover, in terms of the number of people affected by the dementia, which is many times as they have to live with the patients and take care of them. However, the public awareness is poor, basic and clinical researches on dementia are paucity, and the availability of social benefit is inadequate. In addition, since Shidu families did not emerge on a large scale until a decade ago, when the first generation of parents affected by the one-child policy grew too old to have children, healthcare and old-age support are the biggest concerns for these families.

Dementia is predicted to have the greatest economic effect among all non-communicable diseases. As the number of people with dementia grows, indeed, in next 40 years, 37.58 million people with dementia may live in China, total payments for health care, long-term care, and hospice are set to soar. The monetary cost of dementia in the

United States ranges from \$157 billion to \$215 billion annually, making the disease more costly to the nation than either heart disease or cancer, according to a new Research and Development (RAND) Corporation study [30,31]. ADI estimates that by 2030 there will be an estimated 85% increase in costs, based on the predicted number people with dementia at that time. The worldwide direct costs of treating and caring for people with dementia was more than US \$604 billion in 2010 [4]. Though there is few available data in China, the economic disadvantage associated with medical expenditure and caregiving is enormous with the rising number of dementia and Alzheimer's cases in China in terms of finding appropriate and affordable responses. About 70% of the costs occur in Western Europe and North America due to much lower rate of diagnosis and treatment in low-income countries. Most people currently living with dementia have not received a formal diagnosis. In addition, drug treatments remain largely unavailable to most patients whether in institutions or hidden by family members, and people with dementia are still locked away from society in many places. Therefore, there is considerable potential for cost increases in coming years as diagnosis and treatment gap is reduced. The 4 AD drugs approved by FDA have been in the Essential Medicine List in China since 2011. With economic development and improved treatment, per person costs will tend to increase dramatically.

Dementia is one of the diseases of highest mutilation rate among all chronic diseases, it brings overwhelming disease burden to patients, families, and the country as well [32]. Dependence is independently 2.8 to 9.5 times more common among those with dementia [32]. While the overall life expectancy in China is increasing, the emerging epidemic of dementia has been placing an immense burden on the society as a whole. However, China's national healthcare system is not prepared for the epidemic of dementia. The nation's social safety net is improving but is not yet strong. Only in very recent years has China begun to reverse the near-collapse of public support for health insurance. Those living in urban areas have relatively better access, however, the sick and disabled are also the poorest groups in urban societies. Therefore there are serious problems related to the care of the dementia and the still inadequate social support system in the country. It is essential to increase national capacity to detect dementia early and to provide the necessary health and social care. At present, China is encouraging private capital to invest private hospital and senior care facilities.

Dementia patients gradually lose cognitive and daily-life abilities with emerging psychiatric symptoms, requiring long-term care. Thus, AD and other dementias can be devastating not only for people who have dementia, but also their families and caregivers. China faces multiple obstacles in preparing to care for its fast-growing dementia population. Most nursing facilities in China can't offer appropriate services for seniors with dementia, except a few nursing homes can accept late-stage patients [33]. In-home care providers just appeared in big cities like Beijing and Shanghai [33]. The CAP estimates that China is short of 10 million senior caregivers [33]. Among the main challenges is who will pay for professional care, particularly since in the 1990s China has dismantled the system of financial support by the state.

The general lack of institutions and formal social support leaves the majority of care work to immediate family members or other relatives and friends according to the Chinese Association of Dementia and Cognitive Impairment. Therefore dementia is also called family disease. The need for long-term care for people with dementia strains

health of caregivers and family budgets. The catastrophic cost of care drives millions of households below the poverty line. The China Health and Retirement Longitudinal Study shows nearly one in four Chinese people aged 60 years or older have consumption levels per head below the poverty line.

Without caregivers, people with dementia would have a poorer quality of life and would need institutional care more quickly, and national economies would be swept away by the advancing demographic tidal wave. The whole society must take actions to help family members in terms of reducing their emotional, social, and financial burden. Fortunately, Dept. of Civil Affairs and some local government started funding for caregiver training from 2010.

Both national and local awareness-raising campaigns are vital to ensure investment in dementia services is not wasted. Without an understanding of the condition, its symptoms, and the support available, an inefficient and ineffective approach to the delivery of services to people with dementia will be continued. In order to enhance the awareness of AD and dementia in communities, the whole Chinese society needs to work together: 1) Counteract common misconceptions that lead to dementia - including that it is not very common in the Chinese population, that it is a normal part of aging, or that it is better not to know about it because nothing can be done about it; 2) Raise community and institution awareness and commitment to persons with dementia and their families; 3) Enhance knowledge and skills of professional and family caregivers of persons with dementia; 4) Increase the availability of culturally relevant educational and assessment materials; 5) Increase access to existing services; 6) Create cultural competent sustainable new services.

Data or journal publications were sparse on Chinese Alzheimer's and dementia in every category, particularly economic and carer's burden. Although there are some high quality review of prevalence and incidence of AD and dementia, the national level survey is lacking. The population-based studies of dementia was sparse, perhaps owing to squeezed research funding, and estimates in the country are in danger of becoming outdated. In 2013, an unprecedented BRAIN project aimed at understanding brain activities at a level of detail has been initiated in USA. In addition, the largest dementia research project in history was pronounced in UK. However, Chinese government might be reluctant to prioritise dementia over issues that seem more pressing in the short-term, such as communicable diseases like HIV or economic difficulties. There is also the question of whether any short-term dementia strategies and projections that are initiated will be adequate.

The further elucidation of etiology of AD and effective therapeutic approaches need integrative efforts from each side including, families, communities, and society. Most recently, a group of Chinese scientists developed a micro-optical sectioning tomography (MOST) system that can provide micrometer-scale tomography of a centimetersized whole mouse brain [34]. Using MOST, a detailed three-dimensional structural data set of whole mouse brain at the neurite level can be obtained. The morphology and spatial locations of neurons and traces of neurites can be clearly distinguished. Such studies will play an important role in functional studies of neural systems and in understanding and treating various kinds of brain disorders including AD. However, to effectively solve the problem, strengths-based approaches are needed, which value the capacity, skills, knowledge, connections and potential in individuals and communities. Every side has to work in collaboration to improve social networks and enhance well-being of the community.

In conclusion, our study demonstrates that the prevalence of dementia in China is rising far faster than thought, and the country is ill-equipped to deal with the problem; Adequate resources should be provided at the national, local, family and individual levels to tackle this growing problem; The urgent need in China for expanded community education; improved service coordination; early diagnosis and improved access to treatment, care and services; and the need for ongoing caregiver support. The sooner the challenge is faced, the better and more caring the Chinese society will become.

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