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Analysis and Prospect of Diagnosis, Treatment, and Public Health Policy of Dementia

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Abstract: In China, dementia is the leading cause of elderly disability and death. Its characteristics include a high prevalence rate, a low rate of diagnosis and treatment, and a high cost of treatment and maintenance. As a result, patients (and their families) as well as society are subjected to a significant mental and financial burden. Based on the available research and data, this paper examines the epidemiological classification of dementia, identifies issues with dementia diagnosis, treatment, and maintenance, examines and discusses the application of current public health regulations, and makes pertinent recommendations to advance the development of dementia prevention and maintenance. Finally, we draw the conclusion that while the current policies have somewhat improved the prevention and care conditions for dementia patients and their families, future long-term care and home-care policies, insurance policies, discipline development, and medical education policies still need to be implemented more effectively.

Keywords: dementia, public health policy, long-term care services, home-care services, insurance

1. Introduction

Dementia is a syndrome characterized by acquired cognitive impairment, which significantly declines patients' daily life skills, learning ability, work capacity, and social interaction ability [1]. Currently, there are approximately 55 million people with dementia globally, in which Chinese patients take up about 1/4 of the total number of patients [2-3]. It is estimated that the number of patients in the world will increase to 152 million by 2050 [4].

According to The China Alzheimer Report 2022, in China, there are 15.07 million people who are over 60 years old with dementia, and the current prevalence of dementia in China among people over 60 is 6.0% [5]. Among them, Alzheimer's disease (AD) accounts for 60% to 80% of the overall incidence of dementia in China, and it is one of the primary causes of disability and death of the elderly [6]. As China is heading toward an aging society, a larger number of elderly will expose China

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to a more severe problem of dementia. It is predicted that in 2050 the number of people with dementia will increase over three-fold to 48.98 million [7] (Figure 1).

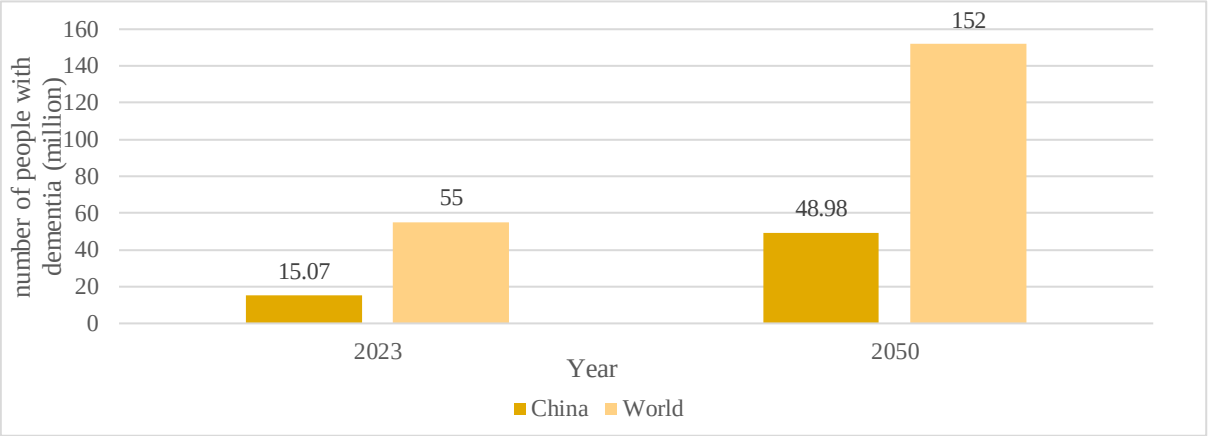

Figure 1: The number of people with dementia in 2030 and 2050 (million)

According to epidemiology data, the prevalence of dementia varies across regions, education levels, and marital statuses. A nationwide community-based study in 2015 showed a 2.36% difference in the prevalence of dementia in rural and urban areas. In 2015, while the prevalence was only 2.90% in urban areas, the prevalence reached 5.26% in rural areas. Besides, western China has the highest prevalence of dementia while southern China has the lowest prevalence. One of the main reasons for the discrepancy is the unequal access to healthcare resources. Research also shows that the prevalence of dementia among the widowed population is 119% higher than the prevalence among married people as the loss of life partners contributes to depression and anxiety, two high risk factors of dementia. Furthermore, the prevalence of dementia among illiterate people is 7.26%, significantly higher than that of people with higher education levels [8].

Moreover, dementia brings a huge economic burden for all countries. In 2019, the total expenditure on dementia health care is approximately 1.3 trillion US dollars, which is 1.5% of the world's total GDP [9]. China is no exception. Based on the research, in 2015, the socioeconomic cost per patient was US $19,144 per year [10]. This number was a huge increase from the cost per patient in 2006 ($2384), although it ignored the loss of productivity and income of non-professional caregivers. The annual total cost in China was $168 billion in 2015, and it is expected to reach $1.89 trillion in 2050. Nevertheless, the high prices of dementia care and treatment are not the only sources of the costs of dementia. Dementia deprives the ability to work with patients as well as the productivity of non-professional caregivers since approximately 84.9% of people with dementia are cared for by family caregivers in China. According to one report, while the direct medical costs and direct non-medical costs for Alzheimer's disease only account for 48.1% of the total costs, the indirect costs such as the loss due to the inability of patients and non-professional caregivers, are even higher, accounting for 51.9% of the total costs [6].

Besides, we also find that dementia is a high-prevalence disease, but the early diagnosis rate in comprehensive outpatient clinics is only 0.1% [11]. There are problems such as low treatment rates of patients and a shortage of physicians. Based on research, approximately 70-80% of people with dementia haven't received treatment yet. The reasons for this phenomenon include economic difficulties and low awareness of the disease [6]. Typically, forgetfulness and lapse in memory are parts of the aging process. Hence, while early symptoms of dementia appear, many people consider it a natural aging process, instead of a cognitive disease. Moreover, the symptoms of vascular dementia are similar to that of stroke, so the symptoms of dementia may be misdiagnosed as stroke itself, especially for people with stroke.

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Compared to 15.07 million people who are over 60 years old with dementia, the number of physicians is relatively small. In 2340 tier-3 hospitals in China, there are 96000 neurologists. However, the number of active dementia specialists is merely 2000[6]. The unbalanced doctor-patient ratio is likely to result in a lower treatment rate of dementia and more misdiagnosis, exacerbating the problem of dementia in China.

2. Existing Public Health Policies and Their Challenges

In response to the above problems, our country has launched multiple public health strategies and accelerated the layout of related industries, including policy improvement and industrial scale promotion of long-term care services and home care services, the establishment of public and private insurance, discipline development, establishment of specialized outpatient clinics, and increased investment in the medical education industry.

2.1. Long-term care service and home care service industry

In China, the government pays the full costs of living and long-term care for people who fit in the Three No's category—those who cannot work, have no source of income, and have no families or relatives to support them—who either live in a community or social welfare institutions, they subsisted by Wu bao (literally translates as five guarantees), for whom the local government guarantees food, clothing, housing, medical care, and burial expenses. In 2014, China had 76,000 Three No's in urban areas and 5.29 million Wubao recipients in rural areas. Together, they made up approximately 2·5% of the older population (aged ≥60 years) [12].

The long-term care service has achieved wide coverage in China. At present, long-term care institutions are mainly public, and the number of long-term care institutions in rural areas accounts for 3/4[12] of the whole, which can largely solve the problem of uneven distribution of long-term care services. However, in rural areas, most institutions are only equipped with the most basic facilities and services, and the professional and technical level of employees is often lower than that of urban institutions; In cities, because of the one-time subsidy and recurrent subsidy for newly-built beds, the goal of increasing a large number of beds has been achieved in a short time, but the bed occupancy rate has been decreasing year by year (Table 1), and even many private institutions providing better services and equipment are expensive. We can infer that the lack of reliable funding, skilled workers, and qualified providers are common difficulties in the home-care market in both urban and rural areas. Without effective policy, growth is challenging.

Table 1: Growth of aged-care beds in China, 2008–18

Year	Total number of beds at year-end (millions)	Total number of beds per 1000 people aged ≥60 years	Total number of beds per 1000 people aged ≥65 years	Estimated % of all beds occupied at year-end
2008	2.345	14.7	21.4	80.9%
2009	2.662	15.9	23.5	79.2%
2010	3.149	17.7	26.5	77.0%
2011	3.532	19.1	28.7	73.7%
2012	4.165	21.5	32.8	70.5%
2013	4.937	24.4	37.5	62.3%
2014	5.778	27.2	42.0	55.1%
2015	6.727	30.3	46.8	--
2016	7.302	31.6	48.7	--
2017	7.448	30.9	47.0	--
2018	7.271	29.1	43.6	--
Data from the Ministry of Civil Affairs, China				

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Long-term care insurance provides basic nursing protection for the elderly, and the home care industry provides more specific services for the elderly, from extensive policies to specific landing services, so that the elderly can have a better nursing experience. Non-government organizations (NGOs) mainly operate community centers and provide home care services. The government contractor model involves different levels of government allocating resources for home care to provide services to eligible older adults. Home care services provide medical care and life support for the elderly in a familiar environment, reduce loneliness, provide personalized care, and improve the quality of life.

Home care will be the main daily medical scene for the disabled elderly in the future, so the home care market will undoubtedly be a blue ocean market in the future. However, there are not many feasible policies and implementation plans for home care issued by the state, and the existing home care industry is still in its initial stage due to a large number of policy incentives given to the long-term care industry in the early stage. Given the differences in living characteristics and economic income in rural cities, home care services are more prone to uneven distribution of resources.

2.2. Public and private insurance related to dementia

At present, the most effective public health strategy to reduce the economic burden of patients and their families is insurance. Including public insurance (as well as the increase in medical insurance reimbursement of drugs and the decline in drug prices) and commercial insurance (mainly critical illness insurance), etc.

The latest medical insurance policy is the launch and price reduction policy of China's original research drug "Nine Phases One" (971). China's "National Basic Medical Insurance, Work Injury Insurance, and Maternity Insurance Drug Catalog (2021)" (medical insurance drug catalog) was announced on December 3") are included in the directory [13]. At present, the production capacity of "Nine Phases One" can meet the medication requirements of about 1 million patients per year. After the "Nine Phases One" enters the medical insurance drug list, the cost of medication for patients will be reduced from $490.98 to $162.38 per month based on 4 boxes per month. Calculated based on the national average 50% medical insurance reimbursement ratio for outpatient clinics, patients The monthly self-payment is less than $82.29, and the direct cost of medication is greatly reduced.

In terms of public insurance, different regions have promulgated different financial subsidy policies for the disabled elderly (Table 2) [14].

Table 2: The subsidy program of Disability cards in Beijing

Subsidy type	Subsidy recipients	Subsidy standards
Subsidy for disabled elderly care (for Beijing registered elderly aged 60 and above)	Elderly individuals with severe disability	$83/Month
	Elderly individuals with disabilities ranging from level 2 to level 3 in intelligence and mental disabilities	$55/Month
	Elderly people with speech and hearing disabilities ranging from level one to level two	$28/Month
Data from The People's Government of Beijing Municipality		

In terms of personal insurance, commercial insurance, and personal pensions are called the third pillar of pensions in my country. Commercial insurance is mainly based on critical illness insurance (add an introduction to critical illness insurance here). The personal pension account is a personal account that all pre-retirement residents can open. At present, the maximum annual deposit limit is

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$1647.49. It invests and obtains more stable returns than the broad stock market. Personal pension policies are conducive to economic distribution and ease the pressure on social security funds [15].

However, at present, the coverage of insurance for disabled groups (including dementia) and their families still needs to be improved. At present, the disability card has only been well implemented in Beijing, but a unified implementation standard has not been established for the disease evaluation of its subsidy level; Commercial insurance is unwilling to invest more in the face of a high discount rate, and the participation of personal pension is not high, so it has not yet formed a scale, and the degree of alleviating public social security funds is very limited.

2.3. Discipline development and construction of specialized clinics

The field of dementia treatment has evolved, leading to a consensus on early intervention, sparking interest in pre-dementia stages and early screening. Xuanwu Hospital of Capital Medical University is a prominent institution in this area, housing the National Medical Center for Neurological Diseases, China International Institute of Neuroscience, and more. They've formed a research team focused on cognitive impairment and conducted significant randomized controlled trials. In 2017, they pioneered China's first nurse clinic, offering treatment and screening for cognitive impairment outpatients [16-17].

Besides, to promote core information on Alzheimer's disease prevention and intervention, public departments should compile core reminders for family care, actively carry out popular science education on prevention and treatment, and guide public welfare actions to prevent the elderly from getting lost. According to reports, in recent years, the National Health Commission has organized 15 provinces to carry out Pilot work on the prevention and intervention of disability (dementia) in the elderly, launched and implemented psychological care projects for the elderly in 1,672 urban and rural communities across the country, provided psychological and cognitive assessments for 580,000 elderly people, and carried out classified intervention and referral services [18].

At the same time, relevant policies to promote the three early stages of dementia (early detection, early diagnosis, and early treatment) were promulgated at the national level——Double 80 objective [19]. "Healthy China 2019-2030" aims to reduce dementia rates in people aged 65+. "Double 80" sets the goal of 80% public awareness of Alzheimer's prevention and 80% elderly cognitive screening in communities, which is vital for curbing dementia growth.

The existing policy encourages the treatment window of dementia to be advanced to the pre-dementia stage, which is also an important measure for early intervention of dementia. However, the current early screening methods are mainly pathological detection of neurobiology and molecular imaging (brain deposition and cerebrospinal fluid content of Aβ, etc. [20]), and most of these methods only exist in large public 3A hospitals in cities. In addition, for some community private hospitals, policy incentives have led many families to sign family doctors, but these doctors often do not have the relevant medical knowledge of early intervention in the pre-dementia stage, so there is still much room for improvement in the implementation of early screening in the pre-dementia stage and early intervention in dementia at the grassroots level.

2.4. Medical education and the labor market

At present, most nursing staff and nurses with clinical experience come from nursing professional schools (vocational schools or colleges) in China. In addition, the government encourages enterprises, institutions, social organizations, other social organizations, and citizens to establish higher education institutions by the law, and participate in and support the reform and development of higher education. The number of nationwide educational (mostly vocational) programs directly related to long-term care has increased from 86 in 2015 to 186 in 2018[21].

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However, the data shows that there are about 300,000 registered long-term care workers in China, but the number of disabled elderly people who need care is as high as 40 million [22]. The existing home/long-term care workers are mainly women with low income and low education levels aged 40-59 [23]. Moreover, the phenomenon of labor shortage has not improved mainly because young people were concerned about career prospects, income level, and social status.

3. Discussions and Policy Recommendations

The public departments should speed up the integration of the long-term care industry, establish the grade standard of long-term care institutions, and promote the allocation of the same facilities and services in the same grade institutions. Furthermore, they should adopt more effective policy incentives to enable private enterprises to better participate in industrial construction and achieve sustainable economic growth. While gradually integrating the long-term care industry, we should give more policy preferences to the home care industry, speed up the implementation of the talent training plan, accurately locate the potential consumers of the industry, set up more personalized service projects, and gradually narrow the scale gap between the long-term care industry and the home care industry, to better keep the two horses abreast.

What's more, the development of science and technology is an important way to improve social progress and efficiency, and it is particularly important to speed up the development of rapid detection reagents. In addition, a disease prevention and control team was established, and the risk factors and identification methods of dementia were compiled, which were included in the assessment as an annual assessment course for primary doctors. In addition, from the perspective of public propaganda, we should add common geriatric disease risk identification and basic maintenance courses in colleges and universities, provide online courses such as maintenance technology training courses, or make TV shows on related topics, to increase social awareness and arouse the concern of people.

For education and workforce, the government should significantly increase funding for education and training programs in order to produce a cadre of multidisciplinary professionals, including geriatricians, pharmacists, therapists, nurses, social workers and etc., in addition to upgrading the skills of current and future front-line workers. At the same time, the government should increase the investment in medical education by, maintaining and expanding one-time scholarships for graduates of related majors, offering relevant convenience policies for settling down, and providing preferential credit policies to relevant employees.

Last but not least, we hope that people with dementia can live a happier life. Therefore, we need to pay more attention to the mental health of dementia patients. The public sector and professional institutions should conduct more research and issue relevant guidelines for the emotional problems of dementia patients, and the community should organize more activities so that the elderly can engage in more social activities; Enterprises should also give qualified employees appropriate maintenance holidays to increase the companionship between relatives and so on. All policies should be based on improving the physical and mental health of dementia patients and their families.

4. Conclusion

Dementia, as one of the common senile diseases, will increase with the aging of the population and bring a heavy economic burden to social families. The existing public health policy has alleviated the uneven distribution of medical resources between urban and rural areas, the pressure of treatment and maintenance costs, the untimely treatment, and the shortage of medical education and labor market to some extent, but there is a great room for improvement in the unification and standardization of implementation standards, the normalization of supervision of policy implementation, the introduction of better private funds, the promotion of early screening and drug research and

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development, social publicity and psychological care of patients. Of course, this paper still has some limitations, and some data and policy implementations have not been consulted in the latest articles, which should be improved in future research.

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