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Exploration of Treatment Measures for People with Cognitive Impairment

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Abstract

With the rapid development of aging and super-aging in China, the number of people with cognitive impairment is also increasing, and there a growing demand for comprehensive and professional cognitive impairment services among the elderly, caregivers, and the general public. Compared with developed countries, the development of services for the elderly with cognitive impairment China is relatively lagging: lack of professional social work services provided; lack of effective support from families, medical care, and communities; and no well-formed community care model for elderly with cognitive impairment, etc. This series of problems leads to the increasing contradiction in the care of the elderly with cognitive impairment. Therefore, actively exploring the best way to develop cognitive services and establishing a comprehensive and professional community care service model as soon as possible is an important measure to improve the quality of life of the elderly with cognitive impairment in their later years This article systematically sorts out the core symptoms and corresponding intervention strategies, aiming to provide scientific management schemes for patients, caregivers, and medical workers.

Keywords: cognitive impairment, patients, treatment, countermeasures

1. Introduction

Cognitive impairment syndrome, also known as cognitive dysfunction, is a general term for diseases that affect an individual's daily living abilities to the decline of cognitive function. In China, this condition is also referred to as "cognitive dysfunction,""senile dementia," or "dementia," the general media tends to use "Alzheimer's disease" as a catch-all term for various types of elderly cognitive impairment. According to the "2018 Chinese for the Diagnosis and Treatment of Dementia and Cognitive Impairment," cognitive impairment syndrome is defined as a syndrome with acquired cognitive dysfunction as its core feature, leading to significant decline in the patient's daily living, learning, working, and social interaction abilities. Data from the International Alzheimer's Disease Association shows that the number of people cognitive impairment worldwide exceeded 55 million in 2020, and it is expected to increase to 78 million by 2030 and 13 million by 2050. Among these patients, 60% live in low- and middle-income countries, and this proportion is expected to rise to 71 by 2050. The regions with the fastest growth in the elderly population are China, India, and South Asia and the Western Pacific. According to a World Health Organization report, in [1]2019, cognitive impairment caused global economic losses of $1.3 trillion, of which approximately 50% of the cost came from informal caregiverssuch as family members or close friends) who provide an average of 5 hours of care and supervision per day. The World Health Organization (WHO) points out that cognitive impairment has become a public health issue that is increasing in severity, and the continuously rising incidence rate and immense care pressure have brought tremendous psychological and economic burdens to both countries and families. In next decade, the elderly population over 60 years old is expected to account for a certain proportion of the total population, and the elderly population over 65 years old will reach another higher proportion. China is rapidly entering an ultra-aged society, which will bring unprecedented severe tests to all aspects of society, including nursing institutions, service personnel, insurance systems medical resources, and so on.

2. Symptoms of Dementia

Patients with dementia have core symptoms such as memory impairment, cognitive impairment, and a decline in comprehension and judgment as well as BPSD (Ministry of Health, Labor and Welfare, n.d.; Yamaguchi, 2018), and about 7% receive home care to trace the progression of irreversibility (Dementia Patients and Families Organization, 2012). [2] Symptoms include the core symptoms of the itself (impairment of high-level brain functions such as memory, thinking, perception, and understanding) and behavioral and psychological symptoms

of dementia (BPSD) (usion, depression, wandering, uneasiness, powerlessness, etc.). The causes of BPSD include not only the severity of dementia and the causative disease but also factors such as personality, life history, environment, and social and psychological factors. [3] The symptoms of dementia are divided into core symptoms and peripheral symptoms. Symptoms directly caused by damage to cells are called core symptoms, which are characterized by impaired cognitive function, including memory impairment, disorientation, impaired comprehension and judgment, and impaired executive function. These core symptoms prevent patients correctly perceiving the real situation around them. Peripheral symptoms, which are usually called "Behavioral and Psychological Symptoms of Dementia (BPSD), include peripheral symptoms of mental symptoms and behavioral disorders. Peripheral symptoms are influenced by the surrounding environment and the reactions of related people, and unpleasant events, deterioration of interpersonal relationships, and environmental changes occur. Nearly all patients with dementia have core symptoms, but not all patients with dementia have peripheral symptoms. Peripheral symptoms vary from person to person and are by environmental factors, physical factors, and care factors. If the living environment and care methods are appropriate, peripheral symptoms can be controlled to some extent. The types of dementia vary in, with memory loss being the most common. They often forget daily conversations and things, and they also repeatedly ask the same questions. In addition, judgment and thinking ability will decline. example, it becomes difficult to manage money and housework, which could be easily done before. In addition, a decline in language expression ability sometimes makes it difficult to speak and understand. In addition, a decline in visual spatial cognitive ability sometimes leads to getting lost at home or in familiar places. After the onset of the disease, mood often changes, and emotions such as anger, sadness, and uneasiness change, leading to deterioration of relationships with family and friends. In addition, indifference, loss of interest in things, and treating things as real. Behavioral changes are also an important feature of dementia. Collecting things that are not needed, getting up and walking around at night, and making inappropriate actions to are more obvious. In addition, some people choose to stay at home because of a combination of various conditions.

3. Etiology and Diagnosis of Cognitive Impairment Patients

3.1 Etiology of Cognitive Impairment

The prevalence of dementia is higher in the elderly and in women. In fact, more than 80% of people with dementia are over the age 80, and about 80% of them are women. There is no known way to completely prevent cognitive decline. However, receiving appropriate services after diagnosis can help the in living with dementia. There are over 100 known risk factors for dementia. For example, brain diseases, trauma, malnutrition, alcohol and drug use, toxins thyroid diseases, liver diseases, etc. The most common disease in dementia is Alzheimer's disease, which is caused by damage to nerve cells. The second is vascular dementia, is caused by damage to the blood vessels of the brain. A deeper understanding of dementia can help with the diagnosis, treatment, and prevention of dementia, thereby allowing people with dementia to a better life. [4]

3.2 Diagnosis of Dementia

3.2.1 First, Clinical Diagnosis of Dementia

The diagnosis of cognitive disorders mainly relies on the clinical manifestations of the patients, neuropsychological tests, and imaging examinations. Commonly used neuropsychological tests the Mini-Mental State Examination (MMSE), Montreal Cognitive Assessment (MoCA), etc. Imaging examinations mainly include cranial CT, MRI, PET,., which can help doctors understand the structure and functional changes of the patients' brains.

3.2.2 Second, Biomarker Diagnosis

In recent years, biomarkers have played an increasingly important role in the diagnosis of cognitive disorders. Japanese researchers have made some progress in the study of biomarkers for cognitive disorders. For example, the levels of Aβ and tau protein in cerebrospinal fluid can be used as biomarkers for AD. In addition, blood biomarkers such as the ratio of β-amyloid 42/40, phosphorylated tau protein, etc., are also under investigation.

4. Treatment Methods for Cognitive Disorders

Representative interventions for caregivers include psychosocial education, skills training, caregiver support, case management, neglect care, and self- by the caregiver, cognitive action therapy, etc. Non-drug therapies not only relieve psychiatric symptoms and behavioral disturbances but also have a significant meaning in actively communicating with dementia as related means of coexisting. Therefore, in the clinic, various therapies are combined and implemented, including the purpose of maintaining the QOL and the value of life of patients. to the Guidelines for the Treatment of Cognitive Diseases 2017 (supervised by the Japanese Society of Neurology, 2017), the of dementia is performed with a combined approach of pharmacological therapy and non-pharmacological

therapy for the purpose of improving cognitive function and QOL. Especially for BPSD it is the principle to perform non-drug therapy preferentially to drug therapy. Non-drug therapy is a term that comprehensively covers therapies other than drug therapy, it targets not only cognitive function disorders but also BPSD and activities of daily living (ADL) for the purpose of improvement. It is roughly divided into interventions for dementia patients interventions for caregivers. Representative examples of interventions for dementia patients include cognitive function training, cognitive stimulation, cognitive rehabilitation therapy, physical therapy, music therapy, reminiscence therapy, cognitive action therapy.

4.1 Drug Therapy

Currently, the drugs used to treat cognitive disorders mainly include cholinesterase inhibitors, NMDA receptor antagonists, etc. These drugs can improve' cognitive function and activities of daily living, but they cannot prevent the progression of the disease. In addition, some new drugs such as BACE inhibitors, tau protein-ing drugs, etc. are under development.

4.2 Non-Pharmacological Treatment

In addition to drug therapy, non-drug treatments also play an important role in the treatment of cognitive disorders. Japanese research has shown that non-drug such as cognitive training, music therapy, exercise therapy, and psychotherapy can improve patients' cognitive function and quality of life. In addition, social support and family care are also essential the rehabilitation of patients with cognitive disorders.

For the rehabilitation treatment of patients with cognitive disorders, occupational therapy is the main professional, and for the occupational therapy of inpatients with, in most cases, group therapy of more than 120 minutes is implemented once. In occupational therapy, the above non-drug therapies are combined and implemented according the various goals of the target. Occupational therapy is implemented by focusing on the purposeful and valuable living behavior of the target in order to promote people's health and happiness. is the same for people with dementia. Symptoms are characterized by memory impairment, recognition impairment, attention impairment, and completion dysfunction. Since the person cannot express what he or she, or cannot proceed with things as intended, it can lead to anxiety and loss of self-confidence, and then to a decrease in QOL. Therefore, regardless of the therapy, it is important to adjust the environment to what the target can do as much as possible, or to support not to fail, so as to enhance the motivation, and at the, to enhance the activity amount and self-efficacy by expressing praise and gratitude, and to implement it considering the improvement of QOL. [5]

4.2.1 Cognitive Function Training

With a focus on specific areas of cognitive functions such as memory, attention, and problem-solving, tasks are conducted using paper computers that match the level of each function, divided into individual therapy and group therapy. Kumazawa et al. (2010) conducted an attention function training as individual training for 12 patients with mild Alzheimer's disease. The content of the attention function training included the deletion and selection of target characters (numbers) on paper, listening target characters, immediate reproduction of 5 words, and delayed reproduction 5 minutes later, etc., for 1 hour per week. As a result of comparison through the evaluation of cognitive functions, there was an improvement in cognitive functions, especially in delayed reproduction of memory and working memory. On the other hand, Takechi et al. (201) conducted a 3-month cognitive function improvement training on a computer for 2 times a week for 30 minutes for 1 mild Alzheimer's disease patient, and same training was conducted 1 year and 6 months later for re-verification. As a result, the cognitive functions, emotions, and the results of the implementation of the life evaluation showed that this may be related to the improvement of attention concentration, flexibility of thinking, and improvement of depression tendency. Iikubo et al. (200) conducted a comprehensive cognitive training in the form of group therapy for 63 patients with mild to moderate dementia of various types, once a week for about 4 months, for total of 60 minutes per session, with 15 patients per group. The content of the comprehensive cognitive training included: language function domain, language recall, short play,igraphy, spatial • constructive function domain, combination and arrangement of graphics • blocks and flower arrangement, watercolor painting, calculation function domain, shopping budget, calculation of change,, attention • memory function domain, finding errors, drawing, finding personal belongings, completion function domain, cooking, production of works, situational judgment. As a result of the implementation the cognitive function evaluation, improvement of recognition was shown in patients with mild dementia.

4.2.2 Cognitive Stimulation

It was originally developed from reality orientation (RO), which refers to a variety of activities and discussions (usually in group format) for the purpose of comprehensively enhancing cognitive and social functions. RO was first described by Taulbee et al. (1966) as a method to improve the quality of life of the elderly in a state of

confusion. According to Spector et al. (2000), RO includes prompting orientation and memory information related to time, place, person, etc., which can deepen the understanding of the surroundings, enhance a sense of control, and boost self-esteem. Group RO, which is an intervention method that repeatedly teaches perceptions and other information focused on cognition, has often been classified as cognitive stimulation in recent years. In the meta-analysis study conducted by Huntley et al. (205), a significant improvement was found in cognitive function tests such as the MMSE in the cognitive stimulation therapy implementation group compared to the non-implementation group. Additionally, Bald et al. (1993) reported that RO was effective in reducing symptoms of memory, perception, and depression in patients with Alzheimer's disease compared to the control group In the target facility, 30 minutes or so is implemented at the beginning of all occupational therapy plans, before other therapies. The implementation content is to provide topics such as of date and weather, date, season, current affairs questions, etc., among staff and patients, to maintain correct perceptions.

4.2.3 Exercise Therapy

There are various programs in exercise therapy, which are divided into aerobic exercise, muscle strength training, and balance sense training, etc., most of them combine these multiple exercises to form a program. Aerobic exercise is a long-term continuous exercise with small exercise intensity. Since blood sugar and fat are consumed with oxygen an energy source for the muscles, it is effective for the prevention of lifestyle diseases, the effect of exercise itself, and the improvement of cardiopulmonary function and prevention ofoporosis. Walking, jogging, cycling, aerobics, step-ups, calisthenics, etc. belong to this category. In the 8th edition the guidelines of the American College of Sports Medicine (ACSM) (ACSM•ed., Japanese Society of Sports Medicine, Editorial Board of Physical Science•Supervising, 2011), the principles of exercise prescription, FITT [frequency: frequency, intensity: intensity, time: time (duration), type: type ()] are compatible with each other. This principle is that, even for the elderly, all people's physiological age increases at different rates. Therefore, in exercise prescription, by implementing load tests, past medical history and physical findings are fully studied to determine whether there are absolute contraindications, and for the super-aged without cardiovascular disease or its symptoms, is recommended to start with a mild intensity (below 3 METs) program.

4.2.4 Method of Recall

Cognitive impairment patients often retain long-term memories (such as childhood and youth memories) for a longer period of time, while recent memories are more obviously. The recall method utilizes this characteristic, activating the brain's associative function by guiding patients to recall the past. In specific treatment, personalized recall can be taken first, old photos, familiar music, old items, smells (such as old books, spices), etc., to trigger memories. Next, group recall therapy can be taken, with therapist guiding the sharing of common experiences of the times (such as historical events, classic movies), promoting social interaction and reducing loneliness.

4.3 Dementia "De-Stigmatization" Movement

Since entering the 21st century, countries around the world have carried out a "de-stmatization" movement for cognitive disorders. In 2004, Japan launched a nationwide "de-stigmatization" action for cognitive disorders, and in 2005, it passed the "Decade Plan to Understand Cognitive Disorders and Establish Community Networks", including the re-branding of cognitive disorders, providing assistance to with cognitive disorders and their caregivers, listening to their voices, setting up cognitive disorder cafes, designing courses to raise public awareness of cognitive disorders, and a variety of measures to promote thede-stigmatization" of cognitive disorders. [5] A variety of "de-stigmatization" interventions are also used in the UK's built cognitive-friendly communities including changing public perceptions and biases about cognitive disorders through social media activities, flyers, and personal activities; creating "Cognitive Disorder Friends" to help the public better understand the of people with cognitive disorders; and transforming the community environment to provide better social support for people with cognitive disorders and encourage them to participate in social activities. In addition, countries such as United States, Australia, the Netherlands, Indonesia, and Canada have successively carried out cognitive-friendly community construction intervention projects through different measures and have made certain progress. The research on the cognitive-friendly community project points out that through community dissemination and understanding of cognitive disorder-related knowledge, the "stigmatization" of cognitive disorder diseases can be; people with cognitive disorders can obtain more social support and opportunities to develop social relationships. [6]The "National Health Commission 2020" released the "Special Service Work Plan for Prevention and Treatment of Elderly Dementia", emphasizing the need to enhance residents' awareness of the prevention and treatment of elderly cognitive function disorders and to reduce bias and discrimination. [7] problem of "stigmatization" of cognitive disorders is widespread, including international organizations such as the WHO and ADI, and Western developed countries have carried out a large number studies on this issue. The Chinese government also

emphasizes the need for "de-stigmatization" practices from a policy perspective. However, domestic research in this area has not formed a systematic study. Shanghai is one of the first cities to start the construction of cognitive-friendly communities, and in 2019 it issued the "Shanghai Program for Cognitive Disorder-Friendly Communities for the Elderly". Afterwards, hospitals such as the Shanghai Mental Health Center's Department of Geriatrics (the's Disease Diagnosis and Treatment Center of Shanghai Jiao Tong University) and community hospitals, social organizations, etc., have jointly built a friendly community that provides full-, continuous service for people with cognitive disorders. [8] Based onShanghai's experience, Beijing, Nanjing, Tianjin, Hangzhou and other cities have also gradually started to explore construction of cognitive-friendly communities.In summary, although China has realized at the policy level the need to strengthen the awareness of cognitive disorders at the community, institutional, and resident, improve the quality of life of the elderly with cognitive disorders, and strengthen the early detection, early diagnosis, and early treatment of cognitive disorders, the relevant research mainly revolves the "stigmatization" status of cognitive disorders and the problem of medical-seeking behavior of patients with cognitive disorders. A small number of exploratory intervention pilot projects Shanghai and other regions are slightly rough in their research on intervention effects, not deep or detailed enough.

5. Conclusion

In summary, the construction of cognitive-friendly communities in China is still in the exploration stage, and there are serious cultural differences among different communities due to factors as social resources, urban and rural areas, and geographical regions. Inclusive measures are needed to build cognitive-friendly communities suitable for a multicultural background. It is suggested to learn foreign practical experience, combine the social and cultural characteristics of different regions in China, identify the key factors of cognitive-friendly communities from a social ecological perspective, clarify the role relationship key factors and the construction of cognitive-friendly communities, and propose a conceptual framework and practical guidance scheme for the construction of cognitive-friendly communities in China

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