

ORIGINAL ARTICLE

The effect of early cognitive training and rehabilitation for patients with cognitive dysfunction in stroke

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Abstract

Objective: This article explores the effects of early cognitive training and rehabilitation for patients with cognitive dysfunction in stroke.

Methods: Stroke patients have cognitive dysfunction, and the incidence of cognitive dysfunction in stroke patients is six to nine times that of patients without stroke. This article selects 118 patients with stroke in our hospital from August 2017 to August 2019, 42 patients with stroke disorders randomly divided into two groups. Both groups of patients received conventional rehabilitation training, and the observation group performed motion observation therapy in virtual reality equipment based on conventional cognitive training. Analysis of time parameters related to rehabilitation training before and after treatment, and evaluation of standard health effects.

Results: After 4 weeks of treatment, the cognitive training time parameters of the two groups were compared. The cognitive reaction time was shorter than that before treatment. After treatment, the scores of cognitive training and rehabilitation effects were significantly lower than those before treatment, and the two scores of the observation group were significantly lower than those of the control group.

Conclusion: Stroke patients receive early cognitive training with the support of computer-assisted technology to obtain good rehabilitation results.

KEYWORDS

cognitive training, computer-assisted, rehabilitation, stroke

1 | INTRODUCTION

With the deepening of the aging process in my country, the incidence of cardiovascular and cerebrovascular diseases related to it is also rising rapidly, especially the incidence of stroke is accelerating. China is already the world's largest country with stroke. According to data released by the Ministry of Civil Affairs in early 2018, the number of

people aged 60 and over nationwide exceeded 240 million in 2017, accounting for 17.3% of the total population. Among them, there are more than 40.6 million disabled and demented elderly, and both the elderly and the disabled and demented population are showing an accelerated growth trend. The number of elderly people in China is a huge number, which is equivalent to the total population of several foreign countries. Accompanying the growth of the aging population

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is the incidence of stroke in China. Stroke has become the first cause of death in our country. The 2017 China Stroke Prevention and Treatment Report pointed out that in 2016, the comprehensive standardized prevalence rate estimates that the number of people over 40 years old in my country who are currently suffering from and have suffered from stroke reached 12.42 million. To put it in perspective, one person in China has a stroke every 12 s, and one person dies of a stroke every 21 s, and three out of every four-stroke patients have different levels of disability. Our country uses stroke every year. Medical expenses are as high as 40 billion yuan. In addition, strokes in China are on the cusp, showing serious problems such as younger age, recurrence, frequently occurring diseases, and common diseases. According to epidemiological studies, the first 3 months after the onset of stroke is the "golden period" to reduce the disability rate. Early effective and scientific rehabilitation treatment and nursing intervention can help patients rebuild the brain function circuit and improve the sequelae of stroke patients (Licskai et al., 2016).

Poststroke cognitive impairment has varying levels of visual spatial function, orientation, attention, and memory impairment, and their occurrence will be delayed the recovery of other body functions of stroke patients affects the prognosis and recovery process. Modern medicine believes that its onset is related to cerebral ischemia and hypoxia in varying levels of cerebral nerves and tissues caused by abnormal hemorheology in stroke (Sriram et al., 2017). At present, modern medicine focuses on drug intervention combined with rehabilitation intervention, aiming to improve the cognitive function of patients because of actively controlling the primary disease (Biryukova et al., 2016). The butylphthalide soft capsule used in this article has the functions of protecting nerve tissue, improving blood flow and microcirculation in ischemic brain area, anticerebral ischemia, improving the antioxidant enzyme activity of nerve cells, and reducing the area of cerebral ischemic infarction (Rodrigues et al., 2018). With the development of computer science and technology, Computer-aided Cognitive Function Rehabilitation Training has become a new technology for cognitive impairment rehabilitation. It has a wide range of types, interesting topics, intuitive content, convenient and efficient. Rehabilitation training for PSCI patients' execution, eye-hand coordination, memory, attention, and visual space ability through the use of computer software has a considerable effect in improving the cognitive ability of patients, but computer-assisted cognitive system training projects limited and expensive, the application is limited (Turhani et al., 2019). Rehabilitation nursing after stroke, in addition to drug treatment, early functional training, and cognitive training are a very important method, which can prevent complications such as limb contracture, joint deformity, and deep vein thrombosis after stroke (Milantoni et al., 2018). The incidence of cognitive dysfunction after stroke is 50%–75%, and patients accompanied by anxiety, depression, resistance, and other emotional and behavioral abnormalities. Due to difficulty concentrating, decreased learning and memory

abilities, and poor comprehension, patients cannot correctly cooperate with various actions of early rehabilitation training. At the same time, depression, loss of interest, lack of initiative, and so on, lead to various trainings that cannot have carried out smoothly and effectively (Guohua et al., 2018). Therefore, improving the cognitive ability of patients by strengthening functional training is a prerequisite to ensure effective early rehabilitation training.

Cognitive dysfunction mainly includes memory impairment, aphasia, apraxia, agnosia, dyslexia, visual space impairment and so on (Zhu et al., 2019). Relevant survey data show that there are nine cognitive domains in healthy people, 83% of stroke patients have at least one cognitive domain impairment, and 50% of patients are damaged in multiple (≥ 3) domains (Martin-Macintosh et al., 2016). The risk of cognitive dysfunction within 12 months after stroke is greater, and it may last several years later. Among them, nearly one-third of them have dementia, the incidence of dementia due to cerebral infarction is about 30.1%, and the incidence of dementia due to cerebral hemorrhage is about 30.1%. Therefore, poststroke cognitive impairment is an important reason that affects the rehabilitation outcome of patients and the impact of physical dysfunction. Early cognitive rehabilitation training can not only improve the cognitive dysfunction of patients after stroke, but also promote the recovery of patients' activities of daily living (ADL). Therefore, this article reviews the influencing factors and rehabilitation training methods of cognitive dysfunction in poststroke patients, and lays a foundation for further construction of a standardized rehabilitation-training program and clinical practice guidelines for poststroke cognitive dysfunction.

2 | MATERIALS AND METHODS

2.1 | Influencing factors of cognitive dysfunction after stroke

2.1.1 | Age

Age is the most important factor affecting the occurrence of cognitive dysfunction. With age, the incidence of cognitive dysfunction is rising rapidly. Studies have found that the early cognitive deterioration of patients over 70 years of age after stroke is 2.5 times that of patients under 70 years of age.

2.1.2 | Past medical history

Past medical history is related to cognitive dysfunction after stroke. Some scholars have confirmed through meta-analysis that hypertension, diabetes, and coronary heart disease are risk factors for cognitive impairment in ischemic stroke (Lam et al., 2015).

2.1.3 | Disease situation

Investigations have shown that the number of strokes and associated hyperlipidemia are related to the occurrence of ischemic stroke cognition, and the recurrence of stroke and associated hyperlipidemia are risk factors for the occurrence of ischemic stroke cognitive impairment.

2.1.4 | Living habits many daily habits are related to ischemic stroke

The occurrence of cognitive impairment is related, such as smoking, drinking, and abnormal ADL. Regarding whether there is a correlation between cognitive dysfunction and stroke location, the results of different studies are different. Studies have shown that patients with stroke in the front of the head and left hemisphere have severe cognitive impairment. However, some studies believe that there is no correlation between the two, which may have related to the damage of the localization function of stroke (Luca et al., 2018).

2.2 | General information

This article selected 118 patients who were diagnosed with stroke for the first time, which met the diagnostic criteria, and were diagnosed as ischemic stroke by computed tomography or magnetic resonance imaging (MRI). Among them, 59 were males and 59 were females. The age was 48–76 years old, with average of 64.2 ± 1.3 years old. Education level: 14 are in elementary school, 37 are in junior high school, 41 are in high school or technical secondary school, and 26 in junior college or above. The average hospital stay was 18.6 ± 2.4 days. Inclusion criteria: (1) Clear consciousness, stable vital signs, and symptoms of ischemic stroke no longer progress for more than 2 days. (2) No previous mental retardation, completely self-care, no history of mental illness. (3) Patients and their families informed consent. Exclusion criteria: (1) Large-area cerebral infarction and brainstem infarction. (2) Complicated with myocardial infarction or combined with severe liver and kidney dysfunction, severe infection, severe diabetes. (3) Severe communication and communication barriers. The patients were divided into observation group and control group by 59 cases in each group ($p > 0.05$) (Table 1).

2.3 | Rehabilitation training method

The two groups of patients received routine rehabilitation training from the third day of admission, including: passive muscle massage and joint movement, active training of the affected limb, turning exercises from the healthy side to the affected side, sitting balance training, and standing balance training. ADL training content include moving body, putting on and taking off clothes, grooming, eating, toileting, going up and down stairs, and so on.

2.4 | Cognitive function training

Cognitive function training check twice a day, 60 min/each time, and 3 weeks in total. The content includes (1) orientation training asks the patient about the date, time, location and location, direction of the day, and let them distinguish between their left and right limbs, the position of the objects in the hospital, and the distance of objects in the surrounding environment. (2) Attention training trains the patient's attention through simple games such as darts and fishing games. (3) Calculation training exercises the patient's calculation ability through card games. (4) Memory training includes listening to story narration, looking at pictures and remembering numbers, memorizing numbers, reciting lyrics and verses, recalling and telling a few objects and people that I have just seen. (5) Language training: through repeated listening, reading, retelling stories and information, asking questions and discussing topics of interest to patients, so as to train their verbal expression and logical thinking skills (Gamito et al., 2017). (6) Training the ability to solve problems: arrange things related to daily life and let the patient complete it independently, such as eating after washing, putting on clothes and socks and sitting on a chair.

2.5 | Evaluation method

Both groups were evaluated before training and on the 14th and 20th day after training. Use the Simple Intelligence State Examination score to evaluate the patient's cognitive function, and use the ADL to judge the patient's ability of daily living (Kim & Lee, 2019).

TABLE 1 Data of two groups of patients

Group	n	Age	Average course	Type		Education	
				Ischemic stroke	Hemorrhagic stroke	Below high school	Above high school
Observation group	59	62.7 ± 1.6	17.8 ± 0.3	42	17	25	34
Control group	59	65.3 ± 1.4	19.5 ± 0.4	43	16	27	32
t/x^2		-0.92	0.81	0.087		0.24	
p Value		1.55	1.84	0.078		0.61	

2.6 | Statistical methods

The SPSS 19.7 statistical software was used for data processing. The test scores of the stroke patients compared by *t*-test.

3 | RESULTS

3.1 | Information processing learning

3.1.1 | Information processing mode of learning

The learning process is used to illustrate the structure and process of learning. It is great application significant for understanding and teaching process. He proposed a far-reaching information processing learning model (see Figure 1).

From Figure 1, the information flows from one hypothetical structure to another. Generally, the information from some parts is registered, and the rest quickly passed. This registered information belongs to the short-term memory, which can last for 20–30 s (van Dijk et al., 2005). If you want to keep the information, you have to adopt a strategy of retelling. However, retelling can only help preserve information for coding, and cannot increase the capacity of short-term memory. When information changes from short-term memory to long-term memory, the information undergoes a critical transformation, that is, it has to go through the coding process. The so-called coding is not to collect relevant information together. When information needs to use, it needs to retrieve and extracted. The extracted information can be returned to short-term memory. Further consideration of the suitability of the information may result in further searching for information or a reaction.

In addition to the information flow, the learning information-processing mode shown in Figure 2 also contains expectations and execution control. Expectations refer to the goals that students expect to achieve, that is, the motivation for learning. It is precisely because students have certain expectations for learning that the

feedback given by the teacher will have a strengthening effect. In other words, feedback is effective because it affirms students' expectations. Execution control is the cognitive strategy in learning classification. The execution control process determines which information is registered from sensory registration into short-term memory, how to encode, and what extraction strategy to use. This shows that expectations and execution control play an extremely important role in the information processing process (Colombo et al., 2019). The reason why Gagne did not connect these two with other structures in the learning model is mainly because the two may affect all stages of the information processing process, and the relationship among them is not clear at present.

3.1.2 | Learning stage and teaching design

The learning process can be broken down into eight stages (see Figure 3). The left side of Figure 3 is the learning phase, where the name of the phase is on the box, and the main learning process inside the phase is inside. On the right is the teaching event. In this way, the internal learning process of the students is one after another, and the corresponding learning phase. Expectation refers to a kind of expectation that students will get satisfactory results after completing the learning task.

However, on some occasions, students are not initially motivated by the incentives to achieve a certain goal. At this time, it is necessary to help students establish learning motivation and form learning expectations. The ideal expectation can only be formed through the students' own experience, and not only through the teacher telling the students the results of learning (Ersoy & Iyigün, 2021). Therefore, in order for students to form ideal expectations, arrangements should have made to enable students to achieve certain goals before students actually acquire certain knowledge and skills, to show students that they can achieve the desired goals.

When students differentiate the stimulus, characteristics they noticed from other stimuli, these stimuli characteristics perceptually coded and stored in short-term memory. This process is selective perception. At the same time, the various characteristics of external stimuli must themselves be differentiated and distinguishable. Students can only enter other stages of learning after making selective perceptions of the characteristics of external stimuli.

The information temporarily stored in short-term memory is different from the information directly perceived. Here, the perceptual information has transformed into the easiest form to store. This transformation process is called the coding process. The purpose of this encoding is to maintain the information. Such as organizing stimuli in a certain way, or classifying stimuli based on learned concepts, or simplifying stimuli into some basic principles, these will help maintain information (Liu et al., 2018). In this process, teachers can provide students with various coding procedures and encourage students to choose the best coding method.

Humans do not know much about long-term memory so far, but several points are currently clear: First, the intensity of information

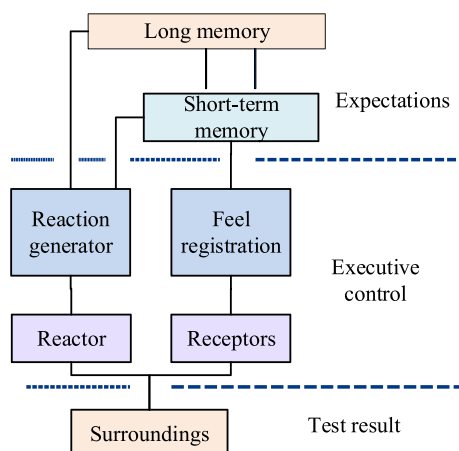


FIGURE 1 Information processing mode of learning

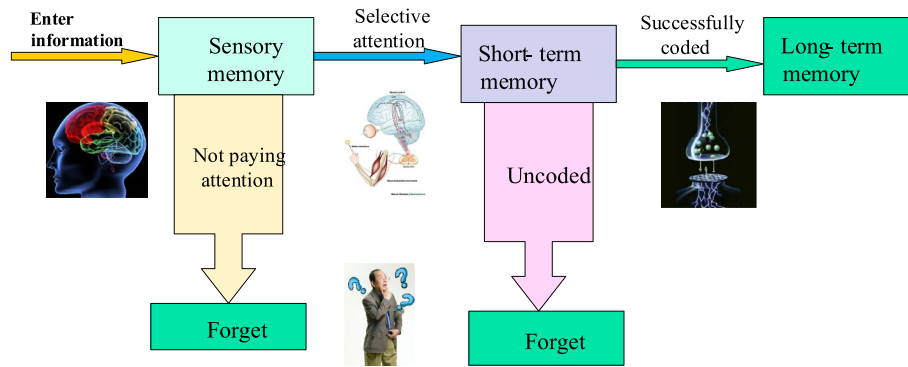


FIGURE 2 Information flow in the process of memory processing

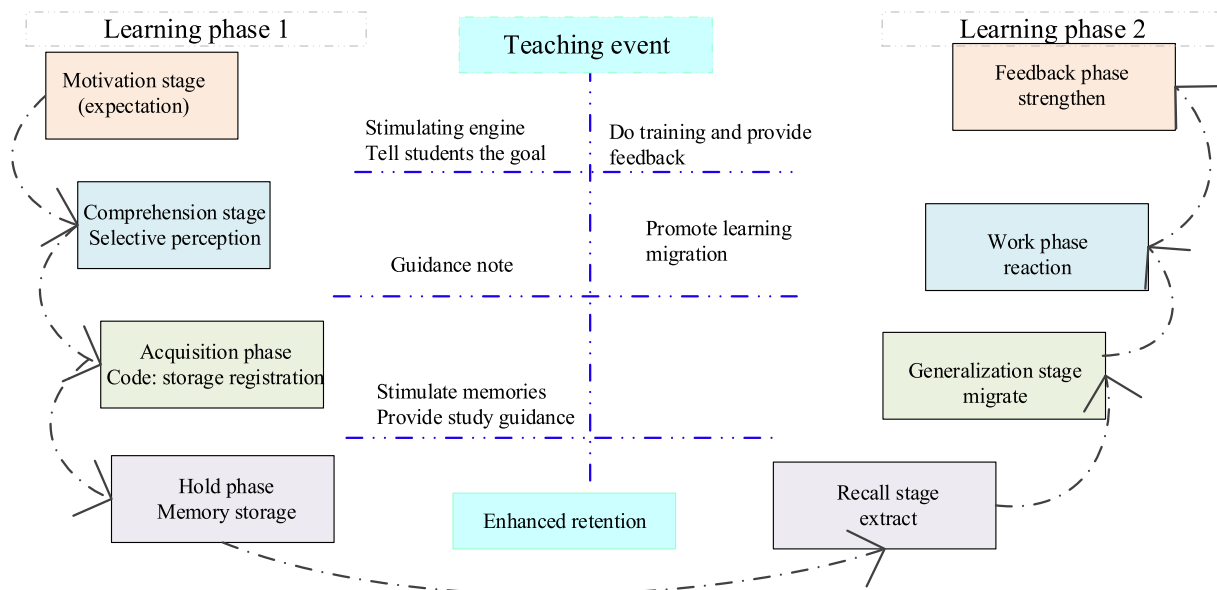


FIGURE 3 Learning phase and teaching events

stored in long-term memory does not diminish with the course of time. For example, an old man in his 70s or 80s recalls his childhood. The events of the time are often clearer than the events of the day. Second, some information will gradually fade away due to long-term use. For example, foreign language words that a person has learned will have forgotten due to frequent use. Third, memory storage may have affected by interference, and the confusion of old and new information often makes information difficult to extract. Therefore, if teachers can make appropriate arrangements for learning conditions and avoid presenting very similar stimuli at the same time, the possibility of interference can have reduced, and the level of information retention can have improved. The information acquired by students must have expressed through homework, and the extraction of information is a necessary part of it. Compared with other stages, the recall or information extraction stage is most susceptible to external stimuli. Teachers can use various methods to enable students to extract clues, which can enhance students' information recall. Figure 4 shows the memory curve of recollection stage. Therefore, for instructional design, it is important to activate the extraction

process through external cues, but it is more important to enable students to master the strategy of providing clues for themselves.

The process of extracting information by students is not always carried out in the same context as when they first learned the information. At the same time, teachers always hope that students can apply the knowledge they have learned to various similar situations in order to achieve the purpose of inferring from one another. Therefore, the learning process must have a general stage, which is the problem of learning transfer. In order to promote the transfer of learning, teachers must allow students to learn in different situations and provide students with opportunities to extract information in different situations. At the same time, it is more important to guide students to generalize and master the principles and principles.

It seems self-evident that a complete learning process requires homework, because only through homework can it reflect whether students have learned what they have learned. An important function of homework is to get feedback. At the same time, students can get a kind of satisfaction by seeing the results of their own learning through homework. When the student finished his homework, he

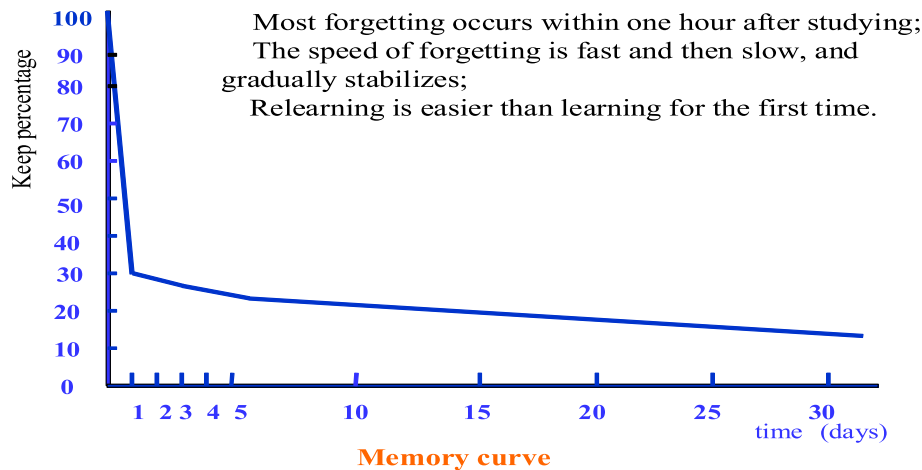


FIGURE 4 Memory curve of recollection stage

immediately realized that he had achieved the desired goal. At this time, teachers should give feedback to let students know whether their homework is correct in time, to strengthen their learning motivation. Of course, the reason why reinforcement plays a role in the learning process is that the expectations formed by students during the motivation phase are affirmed during the feedback phase. When teachers provide feedback, they can not only use words such as “right,” “wrong,” “correct,” or “incorrect” to express, but they can also use many subtle ways to feedback information, such as nodding and smiling. At the same time, feedback does not always need to provide externally, it can have obtained from within the students, which is self-reinforcing.

In short, Gagne believes that teachers are designers and managers of teaching activities, as well as assessors of students' learning effects. A complete learning process is composed of the above eight stages. In each learning stage, the learner's brain is carrying out information processing activities, so that the information has transformed from one form to another, until the learner responds by way of homework. The teaching procedure must have carried out according to the basic principles of learning. After the learning results (i.e., speech information, cognitive strategies, wisdom skills, motor skills, attitudes) are determined, they must be arranged in an appropriate order of the teaching goals.

3.2 | Rehabilitation observation

Stroke patients have dysfunctions in speech, intelligence, sports, and severe cases are even accompanied by epilepsy and abnormal psychological behavior. Therefore, on the basis of clinical routine treatment, continuous and professional rehabilitation care can improve the prognosis of stroke patients the essential. However, the current clinical procedures and content of routine rehabilitation training for stroke patients are relatively simple, lacking a systematic, standardized, and specific rehabilitation training model, and its clinical efficacy has certain limitations. Therefore, more effective

rehabilitation training is needed to promote the rehabilitation of stroke patients (Lim et al., 2018). Comprehensive rehabilitation training can objectively evaluate the motor function of stroke patients, and has the characteristics of systemic and standardization. At the same time, it cooperates with Chinese massage. It can improve the symptoms of insufficient oxygen supply and muscle spasms in stroke patients. Figure 5 shows the evaluation process of rehabilitation observation. Observation index comprehensive rehabilitation training can improve the human body's control ability in an unstable state, fully exercise the deep small muscle groups of the trunk, enhance the coordination between muscle groups, and improve exercise-related balance and coordination.

Before and after treatment, the Montreal Cognitive Assessment Scale (MoCA) evaluates the cognitive function of the patient and scores it. The score is 0–6. This paper (Luca et al., 2018) evaluates the degree of neurological deficits, a total of 15 items are evaluated for the patient's visual field, facial paralysis, consciousness, language, limb function and other neurological functions. The Neurobehavioral Cognitive Status Examination score (Gamito et al., 2017) is used to evaluate the patient's attention, memory, orientation, and orientation related to cognitive status and neurobehavior before and after treatment. Transcranial color Doppler ultrasound was used to measure the middle cerebral artery before and after treatment.

3.3 | Clinical trials and results analysis

3.3.1 | Comparison of clinical efficacy

Stroke during training is performed when the body is in an unbalanced and unstable state, or the equipment used is not fixed and must be controlled by the user, such as balance ball, Swiss ball, balance board, and so on. On the steady-state plane, the superficial core muscles are more likely to trigger to contract, while on the unstable plane, the deep core muscles are more likely to be triggered to contract. Most patients with stroke and hemiplegia have medical

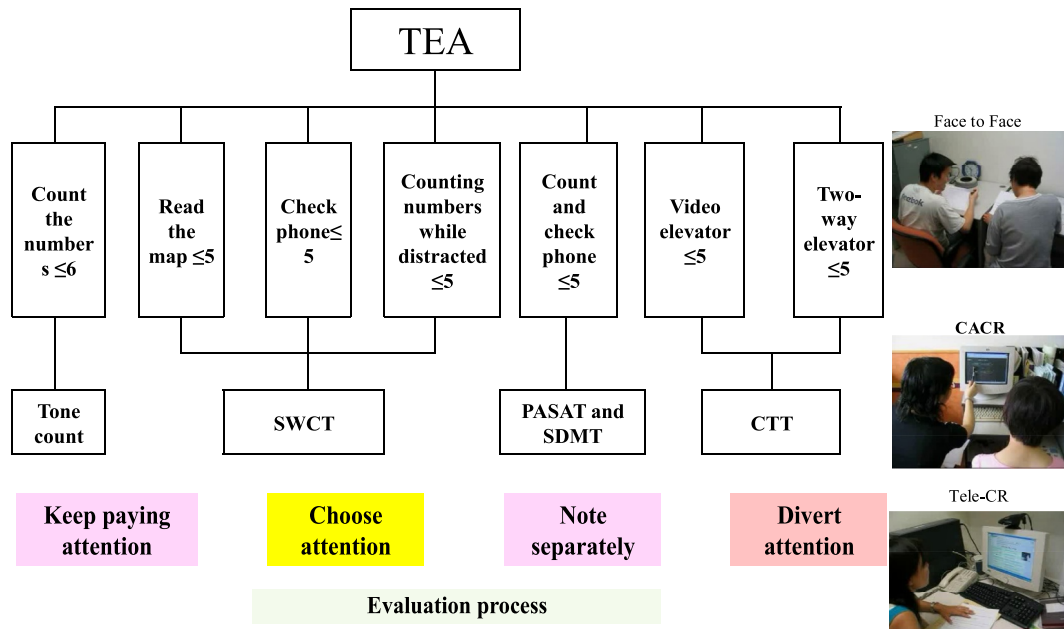


FIGURE 5 Evaluation process of rehabilitation observation

diseases such as high blood pressure and heart disease, and their exercise intensity limited by these diseases. It is necessary to pay attention to the patient's blood pressure and other physical signs, and the core muscle group of strength training must have carried out within a safe range.

The computer can strictly control the stimulus that appears in a standard format, and can record data more accurately, truthfully, and objectively than the therapist or observer. Computer-assisted cognitive training software makes use of computer-presented stimuli to be more attractive, bright, and eye-catching, and help increase and attract patients' attention. The computer can provide a variety of treatment activities according to the needs and level of the patient, making the treatment challenging to the patient but not too difficult to make the patient suffer. The computer can instantly provide a clear, accurate, and nonsubjective judgment feedback to the patient. Figure 6 shows the intelligent balance training system.

The effective rates of the observation group and the control group were 99.5% (56/59) and 98.3% (49/59), respectively. The observation group had better clinical effects ($\chi^2 = 4.6$) (Table 2).

3.3.2 | Comparison of cognitive function and neurological function scores of the two groups of patients

The brain is plastic and capable of functional reorganization. The plasticity principle of the brain provides great possibilities for rehabilitation after stroke. Rehabilitation also creates opportunities for brain relearning. Appropriate promotion techniques can affect the regeneration of nerve cells, increase the number of dendrites, and

form new connections. Thus, it plays a compensatory role. Figure 7 shows the MRI images before and after rehabilitation training. The mechanism may be that exercise training increases the thickness and nutrition of the cerebral cortex, thereby strengthening its activity ability, improving the excitability and responsiveness of the nervous system, and promoting the functional reorganization of brain tissue after damage.

The improvement of cognitive function and neurological function of the observation group after treatment was better than that of the control group. Compared with the control group, their MoCA score was significantly increased, and the NIHSS score was significantly reduced, it can be seen in Table 3.

3.3.3 | Comparison of cerebral blood flow TCD parameters of the two groups of patients before and after treatment

Compared with the control group, the observation group had higher levels of cerebral blood flow Vs, Vm, and Vd, and the cerebral blood perfusion state improved significantly ($p < 0.05$). After treatment, the serum BDNF content of the observation group was significantly increased, while the VILIP-1 and NSE content were significantly reduced. It can be seen in Table 4.

4 | DISCUSSION

With the advancement and development of medical technology, the effects of surgical treatment of cerebral hemorrhage, minimally invasive treatment, improved circulatory drug treatment,

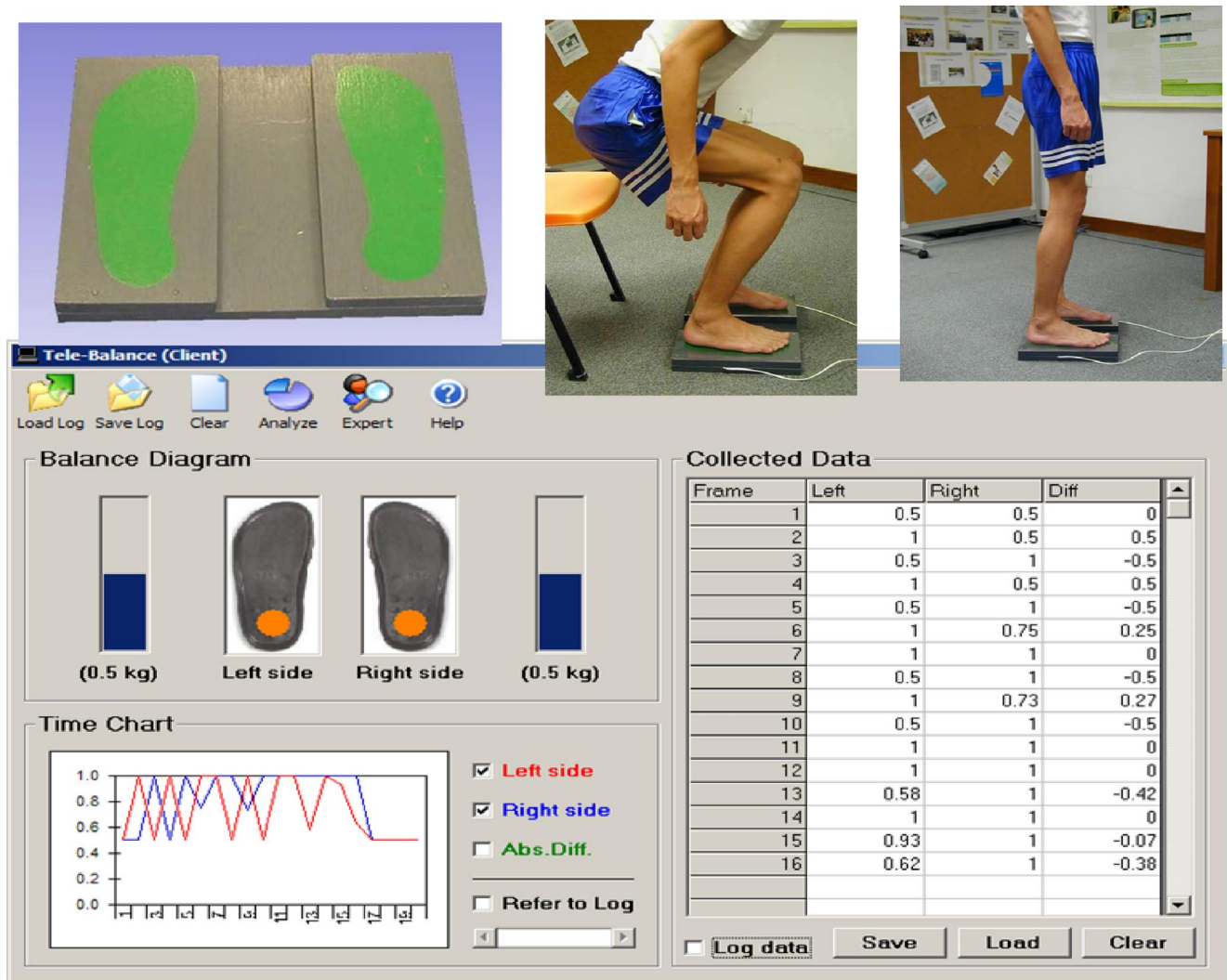


FIGURE 6 Intelligent balance training system

Group	n	Most effective	Effective	Ineffective	Effective rate
Observation group	59	35	21	3	99.5%
Control group	59	23	26	10	98.3%

TABLE 2 Stroke clinical efficacy

cerebrovascular interventional treatment of cerebral infarction and thrombolysis have greatly improved, which greatly reduces the fatality rate. Nevertheless, there is one thing; some patients rescued from death generally have different levels of dysfunction. There are many dysfunctions caused by stroke, including sensory dysfunction, emotional and psychological disorders, cognitive impairment, motor dysfunction, speech and language dysfunction, cognitive impairment, excretion disorders, cardiopulmonary dysfunction, and so on. Patients with these dysfunctions receive further treatment to restore function require a rehabilitation therapist to complete, and stroke rehabilitation is particularly important. Data shows that 80% of patients in China cannot take care of themselves after stroke, and only 20% of patients are able to take care of themselves because of their

mild illness. The disability rate in the United States is the opposite of China. Eighty percent of patients in the United States can take care of themselves, only 20% of patients cannot take care of themselves, and one of the important factors causing this difference is poststroke rehabilitation. Facts have proved that early effective rehabilitation treatment can better induce the patient's brain to regulate the deep and superficial receptors of the skin and joints, and establish the central nervous system reflex arc to promote the reorganization of cerebral cortex function, thereby reducing the dysfunction after stroke. Improve the quality of life of patients. Rehabilitation treatment has become an indispensable treatment method for stroke patients, and this trend will become more and more obvious in the future.

Stroke is also known as cerebral apoplexy. The pathogenesis is the loss of brain nerve function caused by brain blood circulation, and its mortality and disability rate are high. It is also caused by the increase in the proportion of the elderly in today's society and the changes in people's living and eating habits. The rate has a further

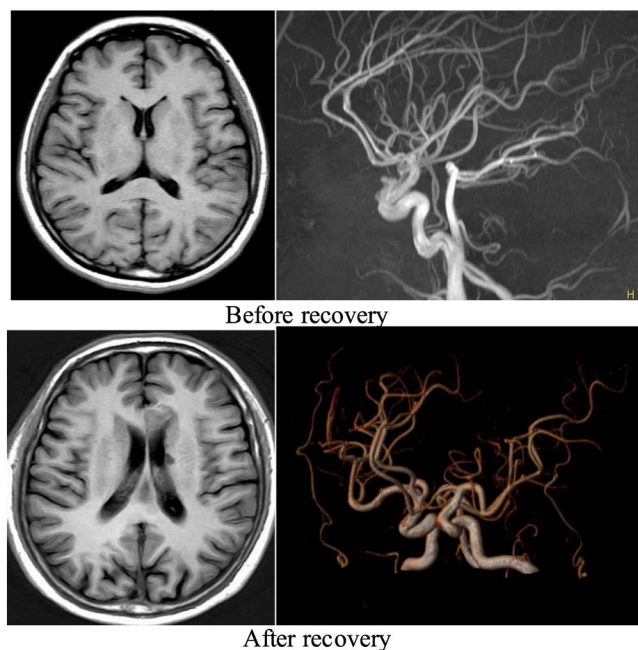


FIGURE 7 MRI images before and after rehabilitation training. MRI, magnetic resonance imaging

TABLE 3 Cognitive function score of stroke patients

Group	n	Time	MoCA	NIHSS
Observation group	59	Before	18.4 ± 3.2	30.4 ± 4.2
		After	26.8 ± 3.4	18.6 ± 2.4
Control group	59	Before	18.3 ± 2.3	30.3 ± 4.3
		After	21.1 ± 3.2	24.1 ± 3.5

Abbreviation: MoCA, Montreal Cognitive Assessment Scale.

TABLE 4 Comparison of TCD parameters of cerebral blood flow before and after treatment between the two groups ($\bar{x} \pm s$, cm/s)

Group	n	Test time	Vs	Vm	Vd
Observation group	59	Before	76.2 ± 10.8	43.9 ± 6.2	27.5 ± 6.2
		After	88.2 ± 13.4	57.3 ± 10.3	43.2 ± 8.9
Control group	59	Before	76.2 ± 10.8	42.8 ± 6.8	27.9 ± 7.1
		After	78.2 ± 11.8	48.2 ± 7.4	37.1 ± 8.8
Group	n	Time	BDNF	VILIP	NSE
Observation group	59	Before	8.3 ± 0.8	537.8 ± 46.9	22.4 ± 6.2
		After	17.2 ± 2.4	352.3 ± 10.8	13.1 ± 3.6
Control group	59	Before	7.3 ± 0.7	527.4 ± 46.8	22.5 ± 6.1
		After	11.6 ± 1.6	448.3 ± 32.3	17.3 ± 4.9

upward trend, which has attracted the attention of medical workers. If stroke patients pass the acute phase, 70% of cases may have sequelae of varying levels of limb dysfunction; especially lower limb motor dysfunction, which can cause the patient to lose the ability to walk. This is also after the patient is discharged from the hospital. Under the influence of emotions, diet and other external factors, cerebral palsy, blood spilling outside of the brain, resulting in crooked mouth, slanted eyes, paralysis of limbs, fatigue, aphasia, and so on, seriously affecting the prognosis. At this stage, studies have shown that early rehabilitation intervention for patients can minimize the sequelae and improve the prognosis. Therefore, Chinese medicine practitioners have also proposed corresponding treatment methods, among which acupuncture and mirror therapy are applied more frequently and are feasible. In this study, the author aims to analyze the clinical efficacy of acupuncture and moxibustion and mirror therapy based on mirror neuron theory for early rehabilitation care. The results indicates that the patient's condition is stable, early rehabilitation with acupuncture and mirror therapy has a good prognosis. This is because acupuncture can regulate qi and blood, clear the meridians, effectively solve the sequelae of stroke, and reduce symptoms such as hemiplegia, numbness, and aphasia. The results of this study showed that the observation group had lower TCM syndrome scores after treatment. In addition, acupuncture is easy to operate, has no side effects, is safe and reliable. At the same time, mirror neuron specifically refers to a special neuron that can mirror the movement of individuals of the same kind as a mirror. It is required to stimulate the motor neuron system through observation, imagination, and imitation during the best rehabilitation intervention period, and refer to the compensation after brain damage. It has the characteristics of sex and plasticity, repairs the damaged area of the brain, and forms a functional loop. Combined with acupuncture and moxibustion, it can further improve the patient's limb motor function.

In recent years, CACT has become a trend in the adjuvant treatment of cognitive dysfunction in stroke. At present, a series of computer cognitive training systems have successfully developed abroad, and they have gradually achieved good results in general hospitals, communities, and families. Figure 8 shows the comparison of cerebral blood flow before and after rehabilitation. Most of the

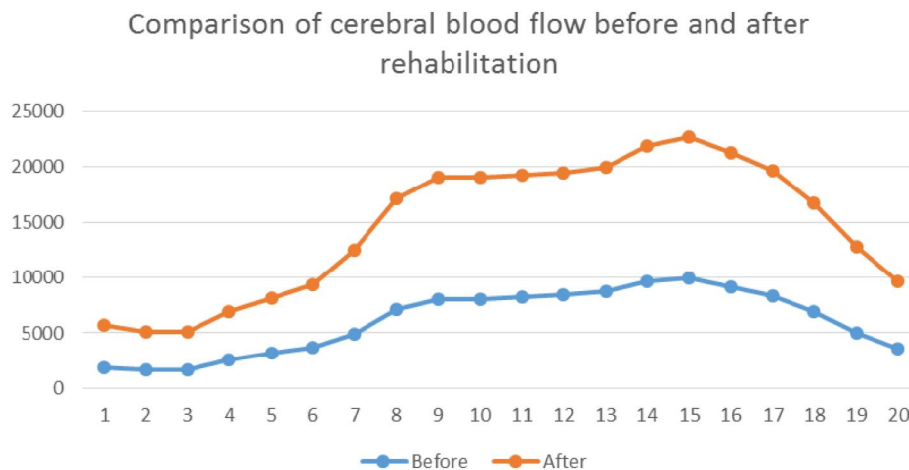


FIGURE 8 Comparison of cerebral blood flow before and after rehabilitation

cognitive training software used clinically is mainly a series of software that can stimulate all aspects of the cognitive field developed by using computer technology. Basic studies have confirmed that the craniocerebral blood supply has mainly completed by the vertebrobasilar arterial system and the bilateral internal carotid arterial system. Local brain tissue ischemia leads to decreased cerebral perfusion and damages subcortical structures such as the cerebral cortex and hippocampus, which is considered to induce cognitive dysfunction. In this article, the detection of the average blood flow velocity of intracranial main arterial blood by transcranial Doppler shows that the levels of cerebral blood flow Vs, Vm, and Vd in PSCI patients have decreased, indicating that there is a certain level of cerebral perfusion decline in PSCI patients. The butylphthalide capsules and computer-assisted cognitive rehabilitation training interventions were added. Acupuncture for traditional Chinese and Western medicine coordinated intervention is more conducive to improving the blood fluidity of the brain, thereby promoting the improvement of the patient's brain tissue perfusion, thereby showing a better effect in improving cognitive function. In addition, in-depth observation in this article shows that the serum BDNF content of the observation group increased significantly, and the VILIP-1 and NSE content decreased more significantly. Modern medicine believes that BDNF is a polypeptide hormone synthesized by brain tissue. As a member of the neurotrophic factor family, it plays a key role in maintaining repair and regeneration after injury and alleviating neuronal stress response, which can increase synaptic plasticity and promote the growth, proliferation and differentiation of neuronal cells repair damaged neurons and improve patients' learning, memory, and cognition. It can be seen that acupuncture, butylphthalide capsules combined with computer-assisted cognitive rehabilitation training are more beneficial to nourish nerves, repair damaged neurons, reduce brain nerve damage, and thus promote the improvement of cognitive function.

In summary, the collaborative intervention of computer-assisted cognitive rehabilitation training in PSCI patients is

effective in improving cognitive function and reducing neurological deficits. It is inferred that the reason may be related to the improvement of cerebral blood flow, the upregulation of serum BDNF content, and the inhibition of VILIP-1, NSE expression is related to repairing damaged neurons, which is beneficial to promote the prognosis of patients and speed up the recovery process. It has broad application prospects and has certain clinical promotion value.

5 | CONCLUSION

Cognitive function is one of the important indicators of the functional prognosis of poststroke patients. Early identification of related risk factors and protective factors affecting cognitive dysfunction in stroke, targeted nursing intervention strategies and rehabilitation functional exercise prescriptions are to prevent cognitive function after stroke an important measure of obstacles. Therefore, clinical practice should incorporate the concept of nursing-led multidisciplinary collaboration, with a series of risk factors affecting poststroke cognitive dysfunction as the entry point, and targeted, multimodal, multichannel early nursing intervention as the key point. Based on the establishment of the intervention quality evaluation index system, construct a set of scientific, effective and appropriate poststroke cognitive dysfunction rehabilitation exercise models or best clinical practice guidelines. The rate of patient returned to hospital and medical expenses reduce the burden of care for family caregivers.

Rehabilitation training and targeted care can guide patients to maintain a good mental state, ensure nutrition, and reduce or avoid complications such as aspiration pneumonia. Therefore, for patients with cognitive impairment in stroke, while carrying out clinical cognitive rehabilitation therapy, active nursing cooperation is of great significance for early stroke patients to restore function, reduce complications and improve quality of life.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Ethical approval was obtained from IEC of Sichuan Academy of Medical Sciences Sichuan Provincial People's Hospital. Informed consent was obtained from the participants with the option to withdraw them from the study at any time. Consent for publication IEC, Sichuan Academy of Medical Sciences Sichuan Provincial People's Hospital approved the publication of data generated from this study.

DATA AVAILABILITY STATEMENT

All data are provided in this study and raw data can be requested to corresponding author.

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