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| RESEARCH ARTICLE

A Review of Chinese Aphasia Assessment Batteries

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| ABSTRACT
Aphasia is a language impairment caused by brain damage. Accurately assessing the language ability of aphasia patients is crucial for developing effective rehabilitation plans. This paper aims to explore the current status and improvement directions of the Chinese aphasia assessment batteries. Firstly, this paper reviews the main study on aphasia assessment batteries both domestically and internationally. Then, the widely used aphasia assessment batteries, both domestically and internationally were introduced in this paper. Furthermore, this paper provides a detailed analysis of the characteristics of current Chinese aphasia assessment batteries. Finally, based on the above research, this paper proposes several improvement suggestions for the Chinese aphasia assessment batteries. For example, appropriate assessment batteries need to be developed for patients of different ages. At the same time, considering the diversity of Chinese dialects, more dialect assessment batteries should be developed in the future to improve the accuracy of the assessment. In addition, the impact of educational background on cognitive ability cannot be ignored. Therefore, the content and difficulty level of assessing materials need to be adjusted according to the patient's educational level. By making some suggestions for the improvement of the aphasia assessment batteries in China, this paper aims to make some efforts to improve the accuracy and practicability of the aphasia assessment batteries and promote more effective personalized treatment for Chinese aphasia patients.

| KEYWORDS

Aphasia Assessment Battery, Aphasia, Language Assessment, Review

| ARTICLE INFORMATION

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1. Introduction

Aphasia is a disturbance of the comprehension and formulation of language caused by dysfunction in specific brain regions. It is the impairment of language after a stroke or other neurological insult (Damasio, 1990, p.531). Aphasia not only affects their language communication ability but also profoundly affects the quality of their psychological and social life. Therefore, there is a growing and urgent need for the assessment of language ability in aphasia patients in China. The assessment of aphasia is rigorous and systematic work. Its main purpose is to measure the type and severity of the patient's language disorder, judge the patient's lost or residual language ability, and provide a reference for the following training. It makes the training process more targeted, rational and scientific.

1.1. Research Background

With the aging of China's population, patients with stroke are increasing year by year, and the total number of aphasia patients is on the rise, which seriously affects the rehabilitation and quality of life of patients. In addition, this also brings a heavy burden to society and families. Therefore, the assessment of aphasia is becoming more and more urgent and important. In view of the high incidence of aphasia, it is particularly important to select a battery with good reliability and validity to evaluate the diagnosis and treatment so as to formulate the corresponding diagnosis and treatment plan. There are several assessment batteries for aphasia at home and abroad. With the aphasia assessment, clinicians can identify the patient's specific type of speech disorder (such as Broca's aphasia, Wernicke's aphasia, etc.) and determine its severity. This provides the basis for

developing an individualized rehabilitation plan. The results of the assessment help identify the patient's strengths and weaknesses so that specific rehabilitation goals can be set. For example, if the patient has significant difficulty with oral expression, the rehabilitation program may focus on improving their oral ability. With the development of neuroscience and cognitive science in recent years, a variety of effective tools for the assessment and treatment of aphasia have been developed.

In conclusion, as one of the key means to measure the language ability of the patients, the battery plays an important role in clinical practice. For many years, aphasia batteries have been widely used to assess language difficulties associated with aphasia (Bruce & Edmundson, 2010, p.79). In China, research and application of aphasia assessment batteries are also ongoing. Several batteries have been developed. These batteries met domestic clinical and research needs. However, the author finds that there are some shortcomings in some widely used Chinese aphasia assessment batteries and some improvements need to be done.

1.2. Research Objectives and Significance

This paper attempts to provide a review of the most widely used aphasia batteries at home and abroad. It focuses on several representative and widely used aphasia batteries and analyzes the application and limitations of these scales in Chinese - speaking aphasia patients. According to the specific characteristics of China, several factors should be considered in the formulation of aphasia assessment batteries with the aim of optimizing Chinese aphasia assessment batteries.

Through this study, the author hopes that the analysis of this paper can provide some reference information in related fields, and improve the accuracy and applicability of the aphasia assessment batteries in China. In addition, the author also hopes that this study can provide a stronger basis for clinical diagnosis and rehabilitation planning, improve patients' communication and quality of life, and promote their recovery.

2. Literature Review

2.1. Review of the Aphasia Assessment Batteries abroad

Many foreign scholars have conducted investigations and research on the main batteries of aphasia assessment. Risser found that Western Aphasia Battery moves quickly with reasonably fluent aphasic patients (1985). Shewan and Kertesz described the reliability and validity characteristics of the Western Aphasia Battery. The WAB demonstrates outstanding reliability, marked by strong internal consistency and temporal stability (1980).

For the study of Boston Diagnostic Aphasia Test Examination, some scholars prove that BADE also can be used in China. Wang and his colleagues used the Chinese version of the BDAE and 105 patients with aphasia were tested. The outcome proves that the Chinese version of the Boston Diagnostic Aphasia Examination can be used to classify aphasia types and compare language functions to observe changes in language function (Wang et al., 1996).

BDAE and WAB are often studied together by many scholars. Patterson argued that BDAE and WAB have contributed to the assessment of aphasia by linking the brain and behavior through the classification of classic aphasia syndromes, going beyond clinical descriptions and tests based solely on language performance (2015). According to Byng, aphasia assessment batteries (BDAE and WAB) that mainly aim to categorize individuals into specific syndromes offer limited insight into the fundamental nature of their language impairment and, as a result, have minimal impact on rehabilitation efforts (2015). However, in terms of validity, reliability and sensitive measurements, Biddle found that the Western Aphasia Battery achieved the reliability and validity criteria established by the researchers, while the BDAE-2 failed to meet these standards (Biddle et al., 2002).

For the study of Boston Naming Test, educational level, age and living environment have significant effects on the Boston Naming Test (BNT) scores of older adults. Educational background has the greatest influence on BNT performance, followed by age and living environment (Neils, 1995). Tallberg pointed out that the BNT, adapted for Swedish-speaking environments, is an effective assessment for evaluating naming abilities (2005).

2.2. Review of the Aphasia Assessment Batteries at home

Zhang et al. studied and analyzed the retest reliability and internal consistency of CRRCAE. He pointed out that CRRCAE has good retest reliability and internal consistency. It has good effectiveness in reflecting the severity of aphasia and can be used an indicator in the clinical and speech rehabilitation of patients with aphasia. It also can play an accurate role in evaluating and guiding treatment. But it needs to pay attention to the retest time. In general, reevaluations are usually performed at 3-to-4-week intervals in order to understand the patient's recovery and adjust training (2005). Yang and Xiong argued that Hakka version of CRRCAE can accurately reflect the changes in listening comprehension, oral expression, retelling, reading and writing ability of Hakka aphasia patients in the south of Jiangxi Province in China, and can evaluate the effect of speech therapy and guide clinical rehabilitation training. In a word, it is suitable for Hakka aphasia patients in the south of Jiangxi due to brain injury (2014).

Li et al. analyzed the reliability and validity of the Chinese version of WAB. He found that the Chinese version of the WAB had good reliability, validity, and structural design. It could be used to assess aphasia severity in Chinese patients. At the same time, however, the Chinese version of the WAB has some problems, so it needs to be improved (2022).

Liao and Thompson have explored and studied the design principles of the Chinese Aphasia Language Battery (2017). CALB includes two parts. Liao also introduced the design principles of the Naming Battery and the Assessment of Verbs and Sentences in detail.

3. Methodology

Through a review of primary aphasia assessment batteries abroad and home,, this study aims to examine their development, application, and commonalities and differences. In addition, employing comparative analysis, this study compares representative batteries both in China and foreign countries. It highlights the depth and applicability of Chinese aphasia assessment batteries and offers suggestions for their improvement. These insights hopes to enhance the batteries' effectiveness in clinical evaluation and rehabilitation for Chinese aphasia patients.

4. Main Aphasia Assessment Batteries abroad and home

4.1. ***Main Aphasia Assessment Batteries abroad***

The literature on aphasia assessment is large and there are about 50 or more specifically designated aphasia tests beginning with that of Broca himself (Kertesz, 2022). According to a number of surveys of five English-speaking healthcare systems by Katz and colleagues (2000), the assessments most commonly used were the Boston Diagnostic Aphasia Examination (Goodglass & Kaplan, 1972), the Western Aphasia Battery (Kertesz, 1982), and the Boston Naming Test (Kaplan, Goodglass & Weintraub, 1983). In this part, we mainly introduce these three types of aphasia assessment battery.

4.1.1. ***Boston Diagnostic Aphasia Examination (BDAE)***

In the 1940s, due to the growing number of patients with aphasia due to brain injuries caused by World War II, the need for aphasia assessment and diagnosis was urgent (Chang & Wang, 2024). After years of hard work, Goodglass and Kaplan developed the Boston Diagnostic Aphasia Examination (BDAE) (1972). The Boston Diagnostic Aphasia Examination can comprehensively measure the various modes of speech ability of patients, diagnose and classify patients with aphasia. It offers inferences about the possible location of brain damage. It also can have a wide range of diagnoses, which can play a guiding role in future training.

The BDAE has multiple subtests instruments for investigating a broad range of language impairments that are common consequences of brain damage. It is designed as a comprehensive measure of aphasia. The examination provides materials and procedures to evaluate five language-related sections. The five language domains include conversational and expository speech, auditory comprehension, oral expression, reading, and writing.

BDAE is also used in China. Wang and his colleagues used the Chinese version of the Boston Diagnostic Aphasia Test Examination and 105 patients with aphasia were tested. The outcome proves that the Chinese version of Boston Diagnostic Aphasia Examination can be used to classify aphasia types and compare language functions to observe changes in language function (Wang et al., 1996).

However, this battery usually takes a long time, usually 2-3 hours to complete the evaluation, and there are some problems that are difficult to score. Therefore, later scholars have adjusted and improved it, such as Western Assessment Battery.

4.1.2. ***Western Aphasia Battery (WAB)***

WAB occupies a central position in a wide spectrum of language tests. It was developed by Andrew Kertesz in 1979. Western Aphasia Battery was simplified according to the Boston Aphasia BDAE, and it can be seen as a shortened version of BDAE. Western Aphasia Battery exhibits a strong affinity with the BDAE in terms of their underlying objectives and structural composition (Risser & Spreen, 1985).

WAB examines the linguistic ability of aphasia patients: information content, fluency, auditory comprehension, repetition, and naming and word finding. It can make a diagnosis of aphasia and evaluate the severity of aphasia. It believes that all aphasia patients can be classified according to eight traditional aphasia syndromes. It overcomes the disadvantages of BDAE, and can complete the inspection within 1 hour, which is more practical. Aphasia can be classified according to the results of the examination.

Western Aphasia Battery has been widely used to assess aphasic patients in a clinical and research setting, in stroke and in degenerative disease of the brain. It has proven to be useful in determining the severity of and nature of language impairment and providing clues for the affected brain location. It is a reliable measure for treatment and recovery of the disease and an important tool to evaluate diagnosis and intervention.

4.1.3. Boston Naming Test (BNT)

Boston Naming Test (BNT) is compiled by Kaplan, Goodglass and Weintraub in 1983. The BNT has been widely translated and adapted into several languages, such as Italian and Chinese. According to Tallberg, the BNT is probably distributed most naming test around the world (2005).

BNT is used to assess the patients' naming ability. This battery includes 60 line-drawn pictures. The pictures are presented in order of difficulty from "easiest" (such as "tree") to "most difficult" (such as an abacus). Participants have 20 seconds to correctly name the item presented. If the participants initially do not name the presented item due to misunderstanding or inability to identify the object, a stimulus prompt can be provided, and the participant is allowed to name the picture for another 20 seconds. BNT enables clinicians to effectively test, assess, and compare the naming abilities of individuals with language disorders. This supports the identification and evaluation of the severity of such conditions, paving the way for more targeted therapeutic interventions (Chedid & Stephan, 2024).

4.2. Main Aphasia Assessment Battery at home

The development of the Chinese aphasia assessment battery can be traced back to the second half of the 20th century. With the development of neuroscience and rehabilitation medicine, Chinese scholars began to attach importance to the diagnosis and treatment of aphasia, and gradually introduced and developed assessment tools suitable for the characteristics of Chinese language. In the initial stage, Chinese clinicians mainly used the aphasia assessment battery introduced from Western countries. Examples include the Boston Diagnostic Aphasia Examination (BDAE) and the Western Aphasia Battery (WAB). Since the late 1980s, China has successively formed the Chinese version of WAB through translation. However, these batteries have certain limitations in assessing Chinese speakers because they are based on English and other Western languages. Therefore, drawing lessons from foreign batteries and combining them with clinical experience, the Chinese Rehabilitation Research Center Standard Aphasia Examination (CRRCAE) was developed in 1990.

As time goes by, domestic researchers have a deeper understanding of the characteristics of Chinese aphasia, and thus began to independently develop an assessment battery suitable for Chinese patients. The Chinese Aphasia Language Battery is an important result. This battery, jointly developed by Beijing Language and Culture University and Northwestern University in the United States, was officially released in 2017. It is the first language competence assessment tool for Chinese aphasia designed based on language cognitive theories (Liao & Thompson, 2017, p.336). At present, the main aphasia batteries used in our country include Aphasia Battery of Chinese (ABC), Chinese Rehabilitation Research Center Standard Aphasia Examination (CRRCAE), and the Chinese Aphasia Language Battery (CALB). In the following part, we will introduce these batteries.

4.2.1. Chinese Rehabilitation Research Center Standard Aphasia Examination (CRRCAE)

CRRCAE is compiled based on the theory and framework of foreign aphasia batteries and combined with the characteristics of Chinese grammar and vocabulary, which is mainly used for clinical evaluation and treatment of Chinese aphasia patients. It is compiled based on Standard Language Tests of Aphasia (SLTA) in Japan. It mainly draws on the design theory and framework of SLTA. According to the characteristics and cultural background of the Chinese language, this examination is compiled. It is widely used in clinical evaluation and treatment of Chinese aphasia patients. This battery has been tested for 151 cases of normal and non-aphasia patients. It has been applied in many hospitals and rehabilitation centers in China (Li, 2000). The battery consists of 30 sub-tests. It is divided into 9 big items, mainly including listening, repeating, speaking and reading, describing, listening, writing and so on. The examination drawings were all drawn by domestic artists according to the Chinese cultural background, and the position arrangement of the drawings was changed, which avoided the patient's repeated evaluation of the familiar position of the drawings. The reliability of the evaluation results is thus increased (Tian, 2011). CRRCAE has good retest reliability and internal consistency (Zhang et al, 2005).

4.2.2. Aphasia Battery of Chinese (ABC)

Aphasia Battery of Chinese was published in 2014. Aphasia Battery of Chinese was compiled by Gao in 1988 in accordance with the basic principles of aphasia examination. In order to reduce the difference in educational level, most of the test statements of ABC are relatively simple. Reading and writing tests are less common than similar tests. It has drawn experience and lessons from Western Assessment Battery and combined with China's national conditions and clinical experience. For example, when testing the patient's language ability, ABC chose some words with Chinese characteristics such as, some ancient poems. In addition, the Chinese zodiac is also involved in this battery. Ancient poetry and the zodiac are both important parts of Chinese culture. Using

these elements ensures that the assessment tool is closely connected to the patient's daily life experience and cultural context, thereby improving the effectiveness and accuracy of the assessment.

Developed after exploration and modification. This battery develops unified guidance, unified scoring standard, unified picture and text card and unified aphasia classification standard, which consists of 9 examining items including conversation, understanding, repetition, naming, reading, writing, structure and visual space, application and calculation.

4.2.3. Chinese Aphasia Language Battery (CALB)

This battery, jointly developed by Beijing Language and Culture University and Northwestern University in the United States, was officially released in 2017. Because there is no tone variation in Japanese and Western languages, the aphasia assessment tools of Japanese and Western often overlook tone factors. Moreover, these tests are not designed in accordance with the cognitive neuropsychology theory of language, thus lacking comprehensiveness in evaluating patients' language abilities (Liao & Thompson, 2022). In light of this, Beijing Language and Culture University collaborated with Northwestern University in the United States to integrate the phonetic, lexical, syntactic, and semantic features of modern Chinese into the original Northwest Naming Test and Northwest Verb Sentence Test. At the same time, they also considered the cognitive and psychological characteristics of the Chinese. Finally, they developed the Chinese Aphasia Language Assessment battery, which is specifically tailored for native Chinese speakers.

5. Characteristics of Chinese Aphasia Assessment Battery

Through the research and investigation of the main aphasia assessment batteries in China, the author found there are some specific characteristics.

5.1. Starting relatively late

Compared with foreign countries, the study of aphasia assessment started later in China. There are many reasons for this phenomenon. Firstly, the Western medical system has a long history, and research in the fields of neuroscience and speech pathology started earlier. For example, from the end of the 19th century to the beginning of the 20th century, Western scientists had begun to conduct systematic research on brain function areas, and with the emergence of a large number of brain injuries after the First World War, it promoted the discussion of neurological diseases such as aphasia. Secondly, European countries and America have a relatively advanced scientific research foundation and education system in medicine, psychology and related disciplines, which provide a good environment for the study of aphasia. In contrast, China's modern medical education and research system was gradually established after the mid-20th century. Therefore, the study of aphasia evaluation in China is later than that in the West.

5.2. Learning from foreign batteries

In the process of research and development, China's aphasia assessment scale will indeed draw on the mature experience and tools of foreign countries. Since the late 1980s, China has successively formed the Chinese version of WAB through translation. Drawing lessons from WAB and the Japanese Aphasia Examination, combined with clinical experience, the Chinese Rehabilitation Research Center Standard Aphasia Examination (CRRCAE) was developed and released in 1990. Gao and his colleagues developed the Chinese Aphasia Language Battery (CALB) based on the Thompson team's Aphasia Battery at Northwestern University in the United States.

Drawing on foreign experience, this method has both advantages and disadvantages. On the one hand, by referring to internationally accepted assessment scales, China can ensure that its assessment methods meet international standards, which can help improve the consistency and reliability of diagnostic results. In addition, many Western countries have a long research history in the field of neuropsychology, and the assessment scales developed by them are often based on a large number of clinical data support and have a high scientific basis. On the other hand, drawing on foreign experience, this method also has disadvantages. Li found that although Chinese version of WAB has good validity, there is still some such as, old vocabulary, awkwardness in translation and high frequency of similar problems in a short period of time (2022). When the foreign battery is translated into other languages, there are differences in language, culture, intonation, etc., which can be solved in the assessment can cause a certain deviation (Zhang et al., 2022). People in different cultural backgrounds may have different understandings of certain words and sentence structures, and the direct application of the foreign batteries to the Chinese group may encounter the problem of understanding deviation. Although the researchers have made adjustments to the Chinese cultural background and language habits as much as possible during the adaptation process, there are still problems such as poor translation. Secondly, there are significant linguistic differences between Chinese and Western languages such as English, including grammatical structure and expression habits, so it is necessary to make appropriate localization adjustments to the foreign batteries to ensure accuracy.

To sum up, it is very necessary to make local improvements on the basis of foreign aphasia assessment batteries, so as to better serve Chinese patients.

5.3. Taking the tone into consideration

Chinese is a tonal language. Different tones can change the meaning of a word, so tone is a very important factor in evaluating the language function of Chinese native speakers. For example, one of the commonly used aphasia assessment batteries in China is Aphasia Battery of Chinese (ABC). It takes tones into consideration. In addition, the Chinese Rehabilitation Research Center Standard Aphasia Examination (CRRCAE) examines the phonological analysis, understanding, and production of tones. It specifically addresses the tonal disorders of Chinese aphasia (Liao & Thompson, 2017). For example, words with similar sounds refer to those characters with similar sounds but different shapes and meanings. This is especially important for Chinese, because Chinese is a tonal language, and even if the pronunciation is the same, different tones can represent completely different meanings. For example, the word"妈"（mā）and "马"（mǎ）, although only one tone difference, the meaning is very different.

In the reading section of the Aphasia Battery of Chinese, there is usually a section about "listening and word recognition". This part is designed to test the patient's language processing ability in general, and in particular whether they can accurately identify the corresponding Chinese characters visually after hearing the words. During this test, patients are asked to choose the word they hear from a set of carefully selected Chinese characters. The characters were listed based on three main criteria: similarity in appearance, and similarity in sound. For example, there is such a test problem: target word is (唱)歌, There are five possible words:畅,常,唱,昌,倡, and the patient needs to select the concrete form from these five words. These five characters have similar pronunciation in Chinese. The difference lies in the tone.

Through such a design, especially the choice of Chinese characters that sound like, patients can effectively test their mastery of Chinese four intonation. If patients can correctly distinguish between these subtle sound changes and can choose the correct Chinese characters based on what they hear, it indicates that they have relatively good speech recognition skills. Otherwise, it indicates that there may be certain obstacles.

The tester will give a score based on the patient's performance. This score is not only an evaluation index of the whole reading ability, but also directly reflects the specific situation of the patient's sensitivity to Chinese tone. Therefore, the tone of Chinese characters is one of the most important parts in the evaluation of aphasia in native Chinese speakers. It helps clinicians to better understand the characteristics of patients' speech disorders, so as to develop more effective rehabilitation training programs.

6. Key Issues for the Improvement of Chinese Aphasia Assessment Battery

With the deepening of research on aphasia assessment of Chinese, researchers have developed more approaches which are suitable for the Chinese background of characteristics and cultural background. The current Chinese aphasia assessment batteries are more comprehensive in content. These batteries cover the scope of listening comprehension, speaking expression, reading, writing and so on. However, there are still many shortcomings in the current aphasia assessment battery. Some issues and factors are not be considered in the formulation of an aphasia assessment battery. There is a lot of work to be done to assess the language ability of aphasia patients (Chang & Wang, 2024).

6.1. Age

Due to the large population of aphasics in China and the large age span, it is necessary to develop a set of aphasia assessment batteries suitable for different levels of aphasia (Chang & Wang, 2024). Age factor plays a key role in the assessment of aphasia, influencing the choice of assessment tools and the subsequent treatment plan. People of different ages have significant differences in their language ability and cognitive level. Children's language skills are developing, while older people may experience some degree of cognitive decline due to the natural aging process. Therefore, assessment criteria that are appropriate for adults may not be appropriate for accurately assessing children or older adults.

Language assessment batteries and tools specifically designed for children are needed. These batteries should take the children's level of cognitive development and stage of language acquisition into consideration. For the elderly, in addition to considering the commonly used assessment tools, special attention should be paid to the impact of factors such as hearing and cognitive decline that may exist in the elderly on the test results. In addition, for elderly patients, aphasia symptoms due to physiological aging may be confused with symptoms of other diseases of aging, such as Alzheimer's disease, which requires the evaluator to be able to recognize such differences during aphasia assessment.

6.2. Dialect

Dialect factor plays an important role in the Chinese aphasia assessment battery. China is vast and there are significant language differences between different regions. These differences are not only reflected in pronunciation but also in vocabulary, grammatical structure and so on.

When assessing the language ability of patients with aphasia, using an assessment battery of the dialect version can improve the accuracy of test results. For those who mainly use local dialects, if they can communicate and express themselves in a way they are familiar with, it will help the researcher to better understand the patients' actual language abilities and problems. If only the mandarin version of the battery is used to test a person who mainly speaks a dialect, the final score may be affected by the language comprehension barrier, which cannot accurately reflect the real language state.

Due to the large number of dialects in China, in recent years, domestic scholars have compiled versions of Mandarin-Uyghur and Mandarin-Hakka according to ABC and CRRCAE for the evaluation of aphasia in relevant areas (Zhang et al., 2022). Training in Shanghainese is more effective for patients in the Shanghai area who have lost their speech due to stroke (Wu et al, 2006). At present, there are some studies on the assessment of Cantonese aphasia in China (Yiu, 1992). The Cantonese Aphasia Battery (CAB) is a tool used for Cantonese aphasia tests. The advantage of CAB is that it is a test tool specifically for Cantonese aphasics, which can more accurately assess the patient's language ability. However, this battery has not been widely used in our country. In addition, the age is too long. Developed in 1992, the culture and language in this battery changed, and there has not been updated in over 30 years (Wen, 2023).

Although there have been some aphasia assessment tools designed for specific dialect groups, the number of such dialect assessment batteries is still relatively small, and the coverage is not wide enough. Therefore, in future battery development, researchers should pay more attention to the influence of dialects, so as to develop more high-quality and diversified tools for assessing aphasia in dialects.

6.3. Education Background

In China, people's educational backgrounds vary greatly. Educational experience is also associated with cognitive abilities, such as memory and concentration. These factors also affect the assessment of aphasia. People who receive more education generally have a wider vocabulary, and they are able to understand and use more complex words. During the assessment process, if the test material is too simple, it may not accurately reflect the true language ability of such patients. On the contrary, for individuals who receive a relatively lower level of education, it is necessary to avoid using too professional or unfamiliar words to avoid misunderstanding.

Moreover, individuals with higher levels of education generally have better literacy skills. This directly affects performance on writing-related test tasks. For example, in the assessment of reading comprehension and written expression, the difficulty level of the material needs to be adjusted according to the patient's educational background. In conclusion, we should fully recognize the influence of education level on the aphasia assessment, which will help improve the accuracy of aphasia assessment and make a foundation for the following treatment.

7. Conclusion

The author reviews the development and the main types of the aphasia assessment battery at home and abroad, explores several main types of aphasia assessment batteries at home and abroad and pays special attention to the characteristics of the Chinese aphasia Assessment batteries. Through the analysis of the characteristics and limitations of different aphasia assessment batteries, we realize that although some effective assessment batteries for Chinese aphasia have been developed and applied in clinical practice, there is still much room for improvement with the deepening of the understanding of language disorders and the advancement of technology. In the future study and formulation of aphasia assessment batteries, researchers should focus on the characteristics of Chinese aphasia patients, so as to develop more suitable and tailored assessment tools for patients and lay a good foundation for their following treatment.

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