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Clinical Perspectives on Language Assessment of Bilingual Patients with Broca's Aphasia M. Phil English Linguistics

Sumayya Imran [1], Maroof Yousaf [2], Rabia Yasmeen [3], Zubia Zaib Awan [4]

[1] M.Phil. English Linguistics Scholar Riphah International University, Islamabad Email: sumayyaimran416@gmail.com
[2] M.Phil. English Linguistics Scholar Riphah International University, Islamabad Email: Maroofyousaf456@gmail.com
[3] M.Phil. English Linguistics Scholar Riphah International University, Islamabad Email: rabiayasmeen124@gmail.com
[4] M.Phil. Scholar Applied Linguistics Hazara University. Email: zubiazaibawan@gmail.com

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Abstract
The current research focuses on the comparison and evaluation of language in bilingual individuals with Broca's aphasia taking the multicultural background of Pakistan into consideration. This research point out the requirement of enhanced diagnostic methods for multilingual populations, within which language lateralization, patterns of recovery, and cultural factors emerge as critical. The study adopted a qualitative approach to data collection; self-administered questionnaires were used with neurologists and clinicians in Abbottabad. The responses were coded and conducted themed analysis where emerging themes included recovery of languages according to pre-injury usage, cross language interpretation and interaction and the central importance of family in the patient's communication. The outcomes also reflect the lack of focus of current measures on the specific fact of bilingualism in language dysfunction. It offers a grounded view of the issues and approaches that may help clinicians and researchers in the future work done on bilingual aphasia assessment.

Keywords: Bilingual aphasia, Broca's aphasia, language assessment, thematic analysis, multilingualism, cultural considerations.

Introduction

Language is studied because it is peculiar to human beings, distinguishing them from other species (Chomsky, 1968). Through language, people communicate and express their ideas and thoughts. However, sometimes, language may not function properly due to disorders, which could be caused by various factors, including innate issues, trauma, or injury. These language disorders, which are grouped under the term aphasia, have an impact on a person's capacity for language production or comprehension.

One specific type of aphasia is Broca's aphasia, in which individuals can understand language but struggle to produce sentences. Often referred to as non-fluent aphasia, it occurs due to damage in Broca's area, located in the frontal lobe of the left hemisphere of the brain (Goodglass,1993). With globalization and increasing access to multiple languages, many individuals are bilingual, having competence in two languages. This opens a new domain of research in psycholinguistics, particularly in cases of bilingual aphasia (Paradis, 2004). When bilingual individuals suffer brain

damage, their language loss patterns can be complex, affecting their ability to use one or both languages.

The traditional localization theory suggests that in bilingual aphasia, one language is often affected more than the other, based on how the brain localizes these languages (Albert & Obler, 1978). However, modern theories like Paradis' (2004) Neurolinguistic Theory of Bilingualism argue that both languages are connected in the brain, meaning damage in one language system may not necessarily cause damage in the other.

This study explores the clinical perspectives on the language assessment of bilingual patients with Broca's aphasia, particularly focusing on assessment tools and recovery patterns in patients from the Pakistani context.

Clinical Tools for Language Assessment

Assessment of bilingual patients requires specific tools in the clinical context. The Boston Diagnostic Aphasia Examination (BDAE) and the Western Aphasia Battery (WAB) are the most commonly used tools in the assessment of the type and severity of aphasia. Nevertheless, some of these tools may require modifications while evaluating bilingual patients in order to accommodate the variations in the make-up of the languages or the level of proficiency of the respective languages.

Paradis (1987) developed the bilingual Aphasia Test (BAT) which addresses the problems encountered by individuals suffering from bilingual aphasia. Each language is tested with respect to its structure and content with comprehension, fluency, and proficiency in that language. The importance of the BAT lies in the ability to examine patients in both of their languages L1 and L2, as a result, healthcare practitioners are able to discern which language is more impaired.

Additionally, neuroimaging modalities particularly MRI and fMRI are essential in measuring the extent of the damage and also locating the particular area that is affected. These scans assist clinicians in factoring in the effects of lesions in the brain on the area known as Broca's area and in turn, help them devise treatment (Ojemann, 1991).

Challenges in Assessing Bilingual Patients

Assessing bilingual patients presents unique challenges. Language dominance whether the patient is more proficient in L1 or L2 plays a significant role in both the loss and recovery of language. In some cases, differential recovery occurs, where one language recovers faster than the other, while in other cases, parallel recovery may be observed (Paradis, 2004).

Another challenge is the cultural context. In countries like Pakistan, where multilingualism is common, assessment tools designed for English speakers may not be fully applicable. There are linguistic and cultural factors to take into account, such as the native language of the patient, compared to the second language, which can vary in proficiency and use depending on different contexts (Ansar, 2014). For instance, a pattern of recovery for Punjabi-Urdu bilingual will be different from that of an Urdu-English bilingual due to the structure-differences between these languages and the relative amount of usage in everyday situations.

Recovery Patterns in Bilingual Patients

Bilingual recovery in patients with Broca's aphasia varies widely. According to reports, in some cases, the first language (L1) is rapidly recovered because it is usually the most deeply ingrained in the memory and cognitive system of the patient (Albert & Obler, 1978). Other patients might show better recovery in their second language (L2) if L2 was used more often in everyday life prior to the onset of aphasia (Kiran & Roberts, 2012).

Clinical observations indicate that certain factors like the age at which each language is learnt, the degree of usage and when both languages are acquired influence the course of recovery, Paradis 2004. In addition, selective recovery in patients with dual language proficiency, where improvement is observed in one language but there is almost no recovery in the other, creates considerable challenges for clinicians, who must decide which language to prioritize during treatment.

Multidisciplinary Clinical Approaches

In many cases of disability associated with Broca's aphasia in bilingual patients, several specialists like speech-language pathologists, neurologists, and neuropsychologists will have to be engaged to ensure effective treatment of the patient. One of the most important responsibilities of speech-language pathologists is individualized language therapy development for each patient, in which the language whose potential for recovery is the highest is chosen, whereas neurologists, for instance, take care of the patients' brain status through imaging techniques and diagnostics among other methods (Ansaldo & Ghazi Saidi, 2014).

Other therapies established in this category like Constraint-Induced Language Therapy (CILT) and Cognitive-Linguistic Therapy have worked exceptionally well in restoring language function in patients with aphasia including those who are bilingual. The objective of such therapies is to enhance language production and comprehension by modifying the existing brain plasticity thus promoting healing of the affected region (Kertesz, 2007).

Cultural Considerations in Clinical Settings

In the Pakistani context, where linguistic diversity is vast, the clinician needs to take the culture and linguistic background of the patient into account. Urdu, the national language, may not be the most widely used language for patients, many of whom would speak Punjabi, Hindko, or other regional languages.Working with such patients needs tools that are culturally sensitive and hold the ability to account for these linguistic nuances.

For instance, differing recovery in Urdu and Punjabi language patients will depend on their social environment and linguistic stimulation..Clinicians must adapt their assessment tools to accurately measure proficiency and recovery in each language, making cultural awareness a key component of treatment.

Objectives of the study

- To assess the effectiveness of various clinical tools in evaluating bilingual patients with Broca's aphasia.
- To explore which of the two languages tend to be recovered first, L1 or L2 after Broca's aphasia occurs.

Research Questions

- What challenges do clinicians face in assessing and treating bilingual patients with Broca's aphasia in diverse cultural contexts?
- What are the recovery patterns in patients with bilingual Broca's aphasia whether the first language is recovered earlier or the second language?

Assessing bilingual patients with Broca's aphasia presents numerous clinical challenges, from selecting appropriate assessment tools to understanding recovery patterns in different languages. Tools like the Bilingual Aphasia Test and neuroimaging methods are crucial for diagnosing and treating these patients. However, clinicians must also navigate the complexities of language dominance, cultural diversity, and individual recovery patterns to provide effective care. The study of bilingual aphasia in Pakistan can contribute significantly to both linguistic and clinical fields, offering new insights into how bilingual patients can best be assessed and treated for Broca's aphasia.

Literature Review

Language and Brain: Neurolinguistics

The relationship between language and the brain is crucial. Different parts of the brain control various functions. Damage to the Broca's area, located in the frontal lobe of the left hemisphere, disrupts language production, resulting in Broca's Aphasia. Understanding the loss and recovery of languages in bilingual patients with Broca's Aphasia is particularly significant, as their language assessment can reveal complexities unique to bilingualism (Caplan, 1987).

Henry Hecaen, in his 1968 paper, is credited by Paradis (2004) as being the first researcher to adopt the word Neurolinguistique. According to his definition, it is a branch of neuropsychology that focuses on oral impairments brought on by brain lesions. Hecaen posited that it should bridge neuroscience and human communication. He emphasized that neurology assimilates the methods of linguistics and psycholinguistics to better understand language deficits.

Fromkin, Rodman, and Hyams (2009) elaborate that the brain contains nearly 10 billion neurons, interconnected by fibers. The cortex, which holds "gray matter," is responsible for decision-making, memory storage, and voluntary actions, including language knowledge and grammar.

As noted by Caplan (1987), the study of aphasia gained prominence in the 19th century, particularly after Paul Broca's presentation to the Anthropological Society of Paris in 1861. Broca demonstrated that the seat of articulate language resides in the inferior frontal gyrus of the left frontal lobe. This landmark discovery has influenced the field of aphasiology, highlighting the left hemisphere's dominance in speech production while acknowledging the right hemisphere's role in language comprehension and recovery.

Language Disorders and Neurolinguistics

Benson and Ardila (1996) argue that aphasia remains a contented topic among aphasiologists, neurolinguists, clinicians, and psychologists. There is a consensus on defining aphasia as a language disorder resulting from brain injury, often due to hemorrhage, ruptured blood vessels, or head trauma (Ahlsen, 2006). According to the National Institute of Deaf and other Communication Disorders (NIDCD, 2008), aphasia occurs suddenly and affects language expression and comprehension, regardless of age or gender. Notably, nearly 80,000 individuals develop aphasia from strokes each year.

Paradis (2004) introduces the concept of neurofunctional modules, explaining that while brain areas are interconnected, each serves specific purposes. Disruption in one module can affect others, illustrating the complexity of language recovery in bilingual patients.

Recovery Patterns in Aphasia

Recovery from aphasia varies widely among individuals. Treatment methods may include daily exercises that help patients regain language control through phonetic reinforcement, followed by enhancements in morphological, semantic, and syntactic aspects, depending on the severity of their condition. Recovery duration is unpredictable, influenced by patient motivation and timely intervention.

Language is a fundamental part of human existence; different areas in the brain control different functions. Damage to Broca's area results in the inability to produce language. Subsequent injury in the left hemisphere often results in deficits to the right hemisphere, essentially expanding the once specific language disorders. Neurolinguistics has advanced in the recovery pattern and methodologies, and the entity is still advancing.

Clinical Assessment Tools and Cultural Considerations

Assessment tools are essential when it comes to assessing the condition of bilingual patients who have Broca's aphasia. For example, the Bilingual Aphasia Test (BAT) has a two-dimensional approach which factors in the individuals ability to speak the two languages in question (Paradis, 1987). It is imperative for clinicians to modify these assessments because cultural and linguistic backgrounds can vary widely in bilingual populations, considering the fact that Pakistan is a linguistic tower with a mixture of languages.

We can look at a Punjabi Urdu bilingual person who recovers from this language disorder, and another one who does the same but happens to be an Urdu English bilingual. Their recovery will be traced in accordance with the structural differences of these languages and the frequency of their usage. This is very important because assessments and interventions do not exist in a vacuum of cultural and linguistic issues (Ansar, 2014).

Methodology

Introduction

This chapter presents the methods used in data collection and data analysis in the context of the research. In this research study, the exploratory qualitative research design, complemented with thematic analysis as the guiding framework for data interpretation, was employed. Qualitative research is more concerned with knowing the subject matter of the research by systematically gathering descriptive information.

Some characteristics of qualitative research include:

Qualitative research often involves asking ended and exploratory questions to gather information from participants.

A comprehensive analysis focusing on themes and patterns within the context.

Participants' responses can be directly used to extract insights, with flexibility.

Research Design

The study incorporates a survey-based qualitative research design. Primary data are collected from health professionals regarding the complexities involved in language assessment of bilingual patients with Broca's aphasia. The research is explanatory in nature; it attempts to access difficulties, practices, and minute aspects related to assessing bilingual aphasia in Pakistan.

Population

The population for this research is medical professionals who have seen and treated Broca's aphasia. It is localized to Pakistan, particularly neurologists and speech therapists working in Abbottabad in the KPK region.

Sample

A purposive sampling technique was used, and 15 neurologists and speech language pathologists from Abbottabad hospitals are included in the sample. Participants were selected based on their expertise in the management of aphasia, as well as on the basis of experience with bilingual patients.

Instrument

The instrument used for data collection was an open-ended questionnaire designed to collect qualitative data from clinicians. The questionnaire had 8 open-ended questions that focused on the following topics:

1. What are the challenges in assessing bilingual patients with Broca's aphasia?
2. How do you decide on the primary language for assessment?
3. Bilingual vs monolingual assessment?
4. What tools and resources do you use for language assessment?
5. How does crosslinguistic interference affect assessments?
6. Cultural factors in the assessment process?
7. Family involvement.
8. Suggestions for change.

The open-ended format allowed clinicians to give detailed responses based on their experiences.

Method

Field research was done through direct observation of clinicians at the hospitals.

1. Ethical Considerations:
Ethical clearance was obtained from the hospital administrations. Participants were informed of the research objectives and assured of confidentiality and anonymity. Consent was obtained before data collection.

2. Questionnaire administration:
The questionnaire was administered in person during clinician's appointment. Respondents were asked to give detailed answers and were given the option to answer in Urdu or English as per their comfort.

3. Data collection process:
The researcher clarified any questions and ensured that the responses reflected the participants' views. To maintain internal validity, all data was collected in a controlled environment and responses were not shared among participants.

Data Analysis:
The research has been done using a thematic analysis method, which is a qualitative research approach to finding, categorizing, and understanding patterns (themes) in a given collection (Braun & Clarke, 2006).

1. Data Familiarization: The data was transcribed and then read several times to familiarize with the data.
2. Coding: Key phrases and concepts were coded to represent recurring ideas throughout the dataset.
3. Identification of themes The codes were aggregated under themes mirroring the key challenges, practices, and insights culled from the clinicians.
4. Theme Saturation: The themes were reviewed and clean up to ensure they made sense and were in connection with the research.
5. Analysis: Every topic was explored in more detail to understand the clinicians' experiences and perceptions of language evaluation in bilingual Broca's aphasia

Results and Discussion

This section analyses and discusses the qualitative findings coming out of open-ended questionnaires and identifies some of the key themes. These themes center upon the main question of how language assessment occurs for bilingual patients with Broca's aphasia and include pattern, challenges and approaches by clinicians.

The themes suggest important considerations regarding the challenges inherent in the evaluation of a bilingual patient, for instance cultural factors, the need to refine assessment methods and the particular recovery tendencies observed in bilingual patients. These pieces of information and challenges are basic components which facilitate the enhancement of diagnostic and therapeutic measures and hence the assessments are appropriate to the cultures and languages of Broca's aphasia patients.

1. Challenges in Language Assessment

Complexity of Multilingualism:
Most patients operate in multilingualism in Pakistan while some communicate in Urdu (L1), English (L2), or other regional languages like Punjabi, Pashto, or Sindhi. These languages may greatly differ from each other; in fact, there are varieties regarding syntax, phonology, or vocabulary. The strongest language was difficult to diagnose by the clinicians, one patient may communicate in different codes for various social and professional contexts. In many instances, codeswitching from one language to another has occurred; much more complex than would be otherwise the case if the languages were all used separately.

Lack of Standardized Tools:
The available tools generally cater for monolingual settings and therefore are unable to express the rich nuances of bilingualism. They thus force the clinicians to make informal assessments or rely

on translations that may negatively affect the accuracy and reliability of the test administration. In the case of our regional languages like Pashto or Sindhi, you would find no formal tools; the clinician must use his judgment, perhaps with some contributions from family members.

Confounding Factors in Elderly Patients:

Most bilingual patients with Broca's aphasia also deal with things like vision problems or hearing loss along, with the effects of a stroke that can cause language issues and cognitive decline. It can be really tough to separate out the language problems caused by aphasia from all the sensory or brain-related issues they might have.

Time and Resource Limitations:

The evaluation of two languages or more is a time-consuming job in clinical settings with high turnover and limited personnel available. The lack of accessibility of translators only adds to the burden if needed in emergency or rural settings.

2. Decision Making in Language Assessment

Pre-Injury Language Usage Prioritization:

Most clinicians report that they will usually assess the language that the patient used most prior to the onset of aphasia. This is often gleaned from history, family accounts, and clinical observations. For example, in rural areas, regional languages such as Punjabi or Pashto often take preference over Urdu or English.

Functional Importance:

In an urban setup, the first language to be examined is most often English, as it is functionally relevant, especially for their jobs requiring a constant use of English. This may overlook the patient's emotional attachments to this comfort standard with their native language, which can greatly affect the trajectory of their recovery.

Observation and Guidance by Families:

Family members may often assist clinicians in determining the language of most relevance in a patient's everyday life. They may indicate the language the patient likes and the context of language use, such as in the home, at work, or socially.

3. Use of Different Methods for Bilingual and Monolingual Patients

Separate Structural Assessment:

The clinicians then develop assessment strategies by evaluating the languages one at a time. Such assessments entail determining proficiency levels, error patterns, and language-specific deficits. This dual approach furthers the clinicians in obtaining a very interactive understanding of L1 and L2 while reducing cross language interference.

Cultural Adaptation:

The assessment methodologies are modified in accordance with cultural differences. For instance, conversational samples could be recorded in culturally relevant contexts such as religious or familial settings, which were missing from the battery of traditional assessments.

Every Approach is Informal:

In the cases where other methods do not accommodate a specific bilingual approach, the clinicians resort to informal techniques, the examples of which include watching conversations as they occur in the natural setting or involving family members in the translation processes and understanding.

4. Tools Used in Assessment

Formal Tools:

The Bilingual Aphasia Test (BAT) being the most appropriate tool for bilingual patients. Application in Pakistan, however, is limited; Urdu and other regional languages have not been modified accordingly. Likewise, the Boston Diagnostic Aphasia Examination (BDAE) and Western Aphasia Battery (WAB), while adapted if at all, are predictably limited due to their monolingual orientation.

Informal Tools:

Where formal tools do not exist, a few clinicians plan their strategies around everyday communication tasks, picture description exercises, or Family and interpreter input.

AI-Based Tools:

Some clinicians have gone even further by incorporating AI-based translation tools like Google Translate, but they lack the reliability to be used in clinical decision-making. Thus, such tools are seen as assistants but not substitutes.

5. Effectiveness of Current Tools

Monolingual Bias:

Existing tools are seldom yet able to integrate the bilingual speakers' interaction between the first and second language. That is, for instance, patients may adopt compensatory strategies in one language which are lacking in the other. The larger picture could miss out on understanding the findings when deficits of either language are considered.

Localization Needs:

Clinicians emphatically asserted that assessment tools must be developed keeping in view the multilingual nature of Pakistan, such that they retain their accuracy and relevance to the local culture and language use practices. It is important, therefore, that cultural and linguistic features of Urdu, Punjabi, Pashto, and other regional languages be a central feature of the assessment tools developed.

6. Connection Between Language and Cultural Differences

Crosslinguistic Interference:

During a testing, coding and intertwining of two languages often took place, showing realworld language use while complicating ultimate evaluations. This interference would cause overestimation or underestimation of language deficits.

Cultural Relevance:

Cultural mismatches in test items lead to misunderstandings. References to objects, activities, idioms, or other constructs, unknown or never done in the local context, will result in lower performance scores that do not reflect actual language ability.

Language Prestige and Recovery:

English is often viewed with a sense of prestige and, therefore, corruption at the immediate time of injury. Therefore, patients and their families are most inclined to put much effort into recovering this language. Whereas, on the contrary, it is highlighted that emotional and other habitual ties with each individual Language, making the recovery of a native Language go faster.

7. Role of Family:

Language History:

Families provide information about how the patient uses language, such as which languages are used in domains (e.g., work, home, social settings). This will thereby help to provide a baseline for assessment processes.

Emotional Support:

Involving family members establishes a supportive environment to reduce patient anxiety and increase cooperation during assessments.

Interpretation and Mediation:

Oftentimes, the family will interpret the answers given by the patient. This is particularly true in cases of regional dialects or shaded, highly cultured expressions.

8. Patterns of Recovery.

Variability in Language Recovery:

A variety of patterns can be found for the patient so that L1 returns to prominence sooner than L2 because of emotional contact and continued use, while there exist cases where L2 lays foundation first but that often occurs in association with L2's dominance in the patient's professional life.

Contextual Factors:

Contextual factors that affect the pathways of recovery and, therefore, determine the contributions of lesion location, neuroplasticity, and poststroke language usage are sufficiently significant to be selected by clinicians for consideration in individualizing therapy plans in accordance with the language and functional needs of the patient.

9. Proposed Improvements.

Institutionalization of Localized Tools:

Clinical opinion was that there is a need for the establishment of certain standardized assessment tools in the context of Pakistan in languages and cultures. This is likely to include adaptations of existing tools like the BAT for regional languages.

Training Programs:

A program of specialization in the bilingual assessment of aphasia for clinicians, speech therapists, and neurologists is crucial for improving diagnosis.

Online Technology:

Use of large mobile apps, AI, and subscriptions would improve efficiencies and boost the reliability of bilingual assessments.

Awareness Campaigns:

Educating patients and families of patients about the role of the L1 for recovery and the merits of such intervention in bilingual therapy is a productive step towards increased engagement and better results.

This study discloses not only the fact that there are a number of challenges but also the fact that there are deficiencies in the assessment of bilingual patients with Broca's aphasia in Pakistan. From the absence of standardized tools to the often crude bilingual recovery process, the results emphasize the increased needs for the local resources, interdisciplinary collaboration, and research. Plugging these holes will ensure better and more culturally appropriate assessment and rehabilitation plans for bilingual patients.

Conclusion

This study looked at the complexities and challenges of assessing bilingual patients with Broca's aphasia in Pakistani settings. Through qualitative analysis of responses from clinicians in Abbottabad, it highlighted the gaps and issues in language assessment for bilingual individuals.

The first and biggest challenge was determining which language was most affected in bilingual patients as multilingualism is common in Pakistan. With varying language proficiency, clinicians struggle to decide which language to assess first. When the patient's language background is unclear, clinicians default to English assuming its importance in professional and urban settings which can inadvertently affect the assessment. The situation is further aggravated by the absence of uniform and ethnically appropriate measuring tools for Urdu, Punjabi, and Pashto, which are the languages spoken in Pakistan. As a result, there's an overreliance on monolingual resources which do not take into consideration the aspects of bilingual aphasia.

Determining the order of language assessment usually depends on the family or the patient's language history before the injury. In cross-linguistic assessments, however, despite emphasizing the language most used before the stroke, cross-linguistic interference is a great challenge. For instance, patients mixing languages during an assessment poses a challenge when attempting to assess which language has greater levels of impairment. Clinically, some patients recover two languages but at different rates, where the more active language in daily interactions recovers faster than the second language. These situations present a challenge in the rehabilitation of bilingual patients after stroke because the recovery process is ably affected by the level of competence in each of the languages spoken by the bilingual individual.

In addressing these challenges, however, the involvement of the family becomes paramount for the clinicians. They offer very important insights into the patient's daily communication and the language they would prefer communicating with, thus providing a backdrop that enhances the

assessment process immensely. This enables the clinicians to make assessments and interventions that are more effective. Belonging to a family is also advantageous but creates the problem of providing adequate resources such as trained interpreters and bilingual experts for proper evaluation.

In addition, the findings indicated that clinicians are usually informal and are able to make observations and talk with someone in the patient's language in order to assess the person's language ability. This tool is helpful, but the absence of any formal such instruments of assessment, such as the Bilingual Aphasia Test (BAT), tends to diminish its value. Even where standardized measurements like the Western Aphasia Battery (WAB) or the Boston Diagnostic Aphasia Examination (BDAE) are given, none of them have been adapted to the multilingual setting which makes them less useful in evaluating patients that are bilingual.

Cultural issues are also important factors on how patients manage language evaluation. For instance, the value attached to certain languages like English may motivate some patients and their families to prioritize the rehabilitation of that language even when it is not functionally relevant. This issue thus emphasizes the importance of the incorporation of cultural values and not just linguistics in the treatment of bilingual patients.

Finally, this study illustrates the challenges of assessing bilingual individuals with Broca's aphasia especially in multilingual settings with few standard tools available. The results supported the need for the development of local and cultural relevant bilingual assessment tools within Pakistan. Emphasis was also laid on the need for the training of clinicians who manage cases of bilingual aphasia as well as the inclusion of families during the assessment and rehabilitative process. These obstacles will be resolved through changes in current methods and more precise treatment and diagnosis is likely to occur in those who have Broca's aphasia and can speak more than one language.

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