

Kertas Asli/Original Articles

Assessments of Aphasia: Practices and Challenges faced by Malaysian Speech-Language Therapists

(Penilaian Aphasia: Amalan dan Cabaran yang dihadapi oleh Jurupulih Pertuturan-Bahasa Malaysia)

ABSTRACT

Aphasia assessment is crucial in diagnosing aphasia, determining the extent of language impairment, and identifying factors that may support or restrict aphasia recovery to design an appropriate plan of care for people with aphasia. Speech-language therapists (SLTs) play a major role in conducting aphasia assessments. Little is known about the practices of SLTs in assessing aphasia in low-resource regions. The present study aims to identify aphasia assessment practices among Malaysian SLTs and related challenges, as well as strategies for improving aphasia assessments from SLTs' perspectives. A total of 32 SLT participants who have been practicing in Malaysia completed an online survey to gather their background information, data pertaining to practices and challenges in conducting aphasia assessments, and suggestions for improving aphasia assessments. Descriptive analyses were conducted for all numerical data. Suggestions for improving aphasia assessment practices were analysed qualitatively using the thematic content analysis approach. SLT practices in aphasia assessment were found to be consistent in certain aspects, but not all. Two major challenges were identified: (a) linguistic barriers between clinicians and clients/caregivers, and (b) a lack of standardized assessment tools for aphasia evaluations. Participants suggested "Internal Strategies" and "External Strategies" for improving aphasia assessment practices.

Keywords: aphasia; clinical practices; Malaysia; speech-language therapists

ABSTRAK

Penilaian afasia adalah penting bagi melakukan diagnosis afasia, serta mengenal pasti tahap kecelaruan bahasa dan faktor penyumbang kepada pemulihan afasia dalam menentukan rawatan yang sesuai bagi individu yang mengalami afasia. Terapis pertuturan-bahasa (speech-language therapists; SLTs) memainkan peranan yang penting dalam menjalankan penilaian afasia ke atas pesakit. Amalan dalam penilaian afasia di kalangan SLTs di kawasan yang kekurangan bahan penilaian tidak begitu diketahui ramai. Kajian ini bertujuan untuk mengenal pasti amalan penilaian afasia di kalangan SLTs di Malaysia, cabaran yang mereka hadapi, dan juga cadangan SLTs untuk menambah baik amalan semasa. Seramai 32 orang SLTs yang berkhidmat di Malaysia telah melengkapkan satu soal selidik atas talian bagi mengumpulkan maklumat latar belakang peserta, amalan dan cabaran yang dihadapi dalam melakukan penilaian afasia, dan cadangan penambahbaikan amalan SLTs dalam menilai afasia. Analisis deskriptif telah dilakukan ke atas semua data numerikal. Cadangan penambahbaikan daripada peserta telah dinilai secara kualitatif menggunakan pendekatan analisis kandungan tematik. Sesetengah amalan penilaian afasia dilakukan secara konsisten oleh SLTs, tetapi tidak untuk kesemuanya. Dua cabaran utama yang dihadapi oleh peserta adalah: (a) sekatan linguistik and klinisyen dan pesakit/penjaga, dan (b) kekurangan alat ujian afasia yang terpiawai. Peserta mencadangkan "Strategi Dalaman" and "Strategi Luaran" untuk menambahbaik amalan penilaian afasia di Malaysia.

Kata kunci: afasia; amalan klinikal; Malaysia; ahli terapi bahasa pertuturan

INTRODUCTION

APHASIA ASSESSMENT PRACTICES

Aphasia is an acquired language disorder secondary to brain injury, characterised by impairment of all linguistic systems (including phonology, lexicosemantic, morphology, and syntax) and modalities, such as spoken, textual, and sign language (Hallowell 2022; Tippet & Hillis 2017). According to the American Speech-Language-Hearing Association (ASHA n.d.), speech-language therapists (SLTs) play a central role in diagnosing aphasia, determining its severity and prognosis, identifying potential intervention goals and methods, and addressing factors that may influence the process of aphasia recovery. Typically, SLTs perform various activities to collect valid and reliable information from multiple sources, including people with aphasia (PWA), their caregivers, family members, and other healthcare professionals (Shipley & McAfee 2021). Assessments are often conducted during the initial clinical sessions to establish a diagnosis, severity level, prognosis, and treatment plan, as well as throughout the course of intervention to determine treatment outcomes and additional needs for aphasia recovery (Simmons-Mackie et al. 2005).

Studies have previously been conducted across the world to explore the practices of SLTs related to the management of aphasia. For example, Katz et al. (2000) compared aphasia management practices among SLTs in four countries (i.e., Australia, Canada, England, and United States). Based on their survey, it was found that more than 85% of SLTs from each country utilized standardized tests to assess language abilities during the acute stage, while at the chronic stage approximately 70% of them utilized standardized tests. The number of SLT respondents who used portions of standardized tests during the chronic stage was also found to increase (Katz et al. 2000). Based on a survey that was distributed to SLTs in Finland, Klippi et al. (2012) found that 79% of participants utilized a Finnish standardized aphasia test and about half of them also used assessments that were standardized in English. In addition, SLTs in Finland also informally assessed non-linguistic cognitive abilities, language use, and communication behaviours through interviews and observations (Klippi et al. 2012). Guo et al. (2014) distributed a survey to Singaporean SLTs and found that 94% of them focused their assessments on language impairments of PWA, which was primarily using non-standardized informal tools. A small number of participants also reported assessing the communication and cognitive functioning of PWA (Guo et al. 2014). In a survey completed by Malaysian SLTs, Diong et al. (2019) found that 60% of participants did not

use standardized aphasia tests, which is due to the non-existent of such a test in local languages. Those SLTs were found to translate and adapt existing English tests (e.g, Boston Diagnostic Aphasia Examination and Western Aphasia Battery) into local languages. These studies showed that the examination of PWAs' language skills is a major part of aphasia evaluation; however, the utilization of standardized aphasia tests may differ from country to country.

Studies that explore the practices of SLTs in different countries are important to broaden the understanding of the needs, challenges, and possible strategies within a socioeconomic and political context. Appreciation towards the similarities and differences of practices and needs of SLTs across different countries may trigger ideas and increase efforts for improving aphasia management at the global scale. It is also important to note that previous studies were conducted to explore the overall practices of SLTs rather than focusing on aphasia assessment practices. Therefore, specific aspects of aphasia management, such as assessment practices could not be explored in greater detail.

SPEECH-LANGUAGE THERAPY SERVICES IN MALAYSIA

In Malaysia, approximately 300 SLTs are actively offering services for 32.7 million of its population (Chu et al. 2021). The Malaysian population consists of various ethnic groups, such as the Malays, Chinese, Indians, Orang Asli, and more than 70 other indigenous ethnicities (Department of Statistics Malaysia 2021; Nicholas 2019). Generally, Malaysians acquire their native language at home, while both Malay and English languages are taught formally at the primary and secondary educational levels (Smith 2003); this naturally creates a multilingual communication environment. In Western countries, such as the United States, cultural and linguistic diversity are more prominent in recent decades due to the migration of minority groups, including Hispanics and Asians (Centeno et al. 2020). In contrast, diversity in Malaysia has taken place for centuries since the colonization period in the 16th century (Kok 1978).

Speech-language therapy services were introduced in Malaysia sporadically and intermittently in major cities, such as Kuala Lumpur, before the 1990s (Lian & Abdullah 2001). This scenario has slowly been improving since the establishment of the first formal university-level training in 1995 (Ahmad et al. 2013). In 2016, the Allied Health Professions Act was gazetted to regulate and legislate the practices of healthcare professionals, including speech-language therapists. According to Chu et al. (2019),

practices of Malaysian SLTs are highly similar to SLTs from other countries, such as Australia and Japan. However, some constraints were identified to challenge Malaysian SLTs from applying the gold standards in speech-language therapy.

Limited human, clinical, research, and financial resources were found to have a negative impact on the progress of the field and the quality of SLT services (Chu et al. 2019; Hassan 2019). Ahmad et al. (2013) projected a need of 3000 SLTs to provide adequate SLT services to the Malaysian population; however, the current number of SLTs is much lower than this projection. Hassan (2019) found that a low number of SLTs restricted them from pursuing a specialization in the management of a specific disorder or age group, involving in multidisciplinary team management, and contributing to advocacy efforts for increasing public and professional awareness about communication and swallowing disorders. To increase the number of Malaysian SLTs, training of future SLTs must be carried out actively; however, there are only three universities that are offering such training programs with a limited number of student intake each year (Chu et al. 2019; Hassan 2019). In previous studies (e.g., Joginder Singh et al. 2016; Phoon & Maclagan 2009), a lack of standardized assessment tools has influenced SLTs' assessment practices, where SLTs tend to adapt English test batteries into local languages and rely on informal assessment methods in making clinical decisions. SLTs reported similar practices when conducting aphasia assessments (Diong et al. 2019; Hassan 2019). To investigate the availability of resources for aphasia rehabilitation and relevant issues, Hassan (2019) triangulated interview responses from Malaysia SLTs and observational fieldnotes based on the clinical settings of aphasia rehabilitation. They found that human, physical, and financial resources are interrelated and contributed to SLTs' practices, needs, and challenges that they face, perspectives of policymakers and stakeholders, as well as efforts and strategies for improving aphasia rehabilitation capacity.

For this study, we aim to focus on the assessment of aphasia in Malaysia by addressing three objectives: (a) to identify SLTs' practices in gathering assessment findings and testing language skills of PWA, (b) to identify challenges that the SLTs' encountered when conducting aphasia assessment, and (c) to explore SLTs' recommendations for improving aphasia assessment practices. Findings from this study may help local SLTs to reflect and strategize for the improvement of their own practices. Improvement of aphasia assessment practices will contribute to better management of aphasia. Study findings may also inform policymakers regarding the needs of SLTs in providing high-quality services for PWA and

their families. The study protocol was reviewed and approved by the Universiti Kebangsaan Malaysia Research Ethics Committee prior to data collection, approval number NN-033-2014.

MATERIALS AND METHODS

PARTICIPANTS

Prior to data collection, an invitation email containing an explanation about the study was sent to the members of the Malaysian Association of Speech and Hearing and the Malaysian Speech-Language Therapists Association. A link to the online survey was provided to SLTs who replied to the invitation email and indicated their involvement in aphasia management. The online survey was distributed to 107 Malaysian SLTs. A total of 32 participants completed the survey, which resulted in a response rate of 29.9%. All participants fit the inclusion criteria of: (a) having a qualification to practice as an SLT in Malaysia, (b) being involved in the clinical management of aphasia during the data collection period, and (c) not taking part in the validation of the survey and pilot study. Participants were requested to provide online consent before completing the survey.

MATERIALS

An online survey was developed based on previous studies that examined aphasia assessment practices (i.e., Simmons-Mackie et al. 2005; Taylor et al. 2009), and SLT practices in Malaysia (Joginder Singh et al. 2016; Mustafa Kamal et al. 2012). Each survey question or item was reviewed and selected based on the study objectives, which are focusing on methods to accumulate assessment findings, testing of PWAs' language abilities, challenges faced by SLTs, and strategies for improving SLT practices. Survey items were adapted so that the focus was directed to aphasia assessment practices. An initial survey was constructed by including selected and adapted items from previous studies. The initial survey went through two review-revision stages. For the first stage, three local SLTs, who primarily focus their clinical work on adult speech-language management, served as panel experts and evaluated the face and content validity of the survey based on the study objectives. They recommended for the inclusion of specific language abilities (e.g., items tested in standardized tests, such as the Boston Diagnostic Aphasia Examination), in addition to the list of standardized tools and informal methods for assessing language abilities among PWA. The presentation of sentences and organization of items under specific

headings were also modified based on their recommendations.

In the second stage, the revised version was distributed to 10 SLTs, who voluntarily completed the survey as a pilot study. Only a small number of SLTs were included in the pilot study because the number of SLTs throughout Malaysia is far fewer than those in developed countries, and many of the Malaysian SLTs are involved in the management of children with communication disorders (Joginder Singh et al. 2016). Participants of the pilot study reported that they completed the survey between 10 and 15 minutes. Based on the pilot study, we calculated the Cronbach's alpha value for internal consistency, which was 0.92. The survey was further revised based on participants' recommendations on its organization and presentation.

The finalized survey that was distributed consisted of three sections: (a) participants' professional backgrounds,

(b) aphasia assessment practices, and (c) challenges and strategies for improving aphasia assessment practices. The focus of each section is presented in Table 1. Section I consisted of multi-choice items with an open-ended section for participants to add responses that were not listed in the presented options. In Section II, each item was presented with a 5-point scale. For both sections, participants were required to select only one answer for each item. Section III consisted of multiple-choice items on the challenges that may be faced by the participants. Participants were allowed to choose more than one answer for this section. The challenges related to aphasia assessment were grouped into three categories: barriers related to cultural-linguistic diversity, limitations of support and resources, and limitations of clinical competency among SLTs in aphasia evaluation. Section III also consisted of one open-ended question on how to improve aphasia assessment practices.

TABLE 1. Survey sections, description and number of items

Survey section	Description of section	Number of items
Section I: Participants' professional background	This section consists of multiple-choice questions to obtain participants' information, including academic qualification, years of experience working as an SLP, types of clinical settings, and clinical workload.	6
Section II: Aphasia assessment practices	This section consists of 5-point scale items that cover various aspects related to aphasia evaluation: Client case history Language abilities Evaluation methods Evaluation contexts	57
Section III: Challenges in aphasia assessment	This section consists of multiple-choice questions on challenges related to linguistic and cultural diversity, resource limitation and competency level. One open-ended question focuses on suggestions for improving aphasia assessment practices.	4

DATA ANALYSES

For Section I, participant count and percentage were obtained for all data points, except Item 5 (What is the percentage of your total caseload within the last year involved the adults?). Mean and standard deviation were calculated for this item. For Section II, where participants responded to Likert scales, five rating points on each scale were simplified for analyzing the frequency and consistency of practice (Mustaffa Kamal et al. 2012). In terms of frequency of practice, "Always" and "Usually" were combined to indicate "More Frequent" practice, while "Sometimes" and "Rarely" were combined to indicate "Less Frequent" practice. Only the rating point for "Never" remained. For Section III, participant counts, and percentages were calculated for the challenges presented in the survey.

For one open-ended question in Section III that focuses on the recommendations of participants for improving aphasia assessment practices, a thematic content analysis was conducted. Each sentence that is related to any forms of recommendation or strategies for improvement was identified. Each one of those sentences was given a code. Those codes were compared and used to group the responses into a more specific category. The categories were then compared to determine major themes that are relevant to SLTs' recommendations for improving aphasia assessment practices. It is important to note that the qualitative analyses were limited to the available responses. Participants were not required to respond to this question and additional contact with the participants to explore their perceptions regarding recommendations for improvement were not made.

RESULTS AND DISCUSSION

THE PROFESSIONAL BACKGROUND OF PARTICIPANTS

As shown in Table 2, slightly more than 50% of participants have less than three years of working experience ($n = 18$).

All except one participant obtained a bachelor's degree at local universities ($n = 31$). Most of them had been working in a hospital setting during the study period ($n = 27$). On average, the participants' workloads consisted of 44.1% of adult cases ($SD = 26.5$). Within the adult caseload, half of the participants ($n = 16$) also indicated that they manage less than 25% of aphasia cases. None of the participants has an additional certification relevant to aphasia.

TABLE 2 Participants' qualification and clinical experience

Background professional information	% (n)
Highest academic qualification	
Bachelor's degree (local university)	96.9% (31)
Master's degree (abroad university)	3.1% (1)
Years of working experience as an SLP	
Less than 3 years	56.3% (18)
3 to 10 years	31.2% (10)
More than 10 years	12.5% (4)
Clinical setting	
Government hospital	59.4% (19)
Private hospital	25.0% (8)
Non-profit center	9.4% (3)
University clinic	3.1% (1)
Aphasia workload (of total workload)	
Less than 25%	50.0% (16)
25% to 75%	40.6% (13)
More than 75%	9.4% (3)

These findings may indicate that aphasia assessments tend to be primarily conducted at hospitals with a small number of participants conducting assessments outside of the clinical settings. This may be due to the nature of service provision at SLTs' workplaces. According to Ahmad et al. (2013), the Malaysian Ministry of Health has been a primary source of employment for graduates of local SLT university programs. Thus, many SLTs are working in public hospitals throughout the country. SLTs in acute public hospitals tend to serve individuals with communication and swallowing impairments across the lifespan, which results in high caseloads and limited time to engage with PWA in non-clinical settings (Diong et al. 2019). Since aphasia affects PWAs' communication abilities, it has been noted that aphasia evaluation conducted in a social and personally relevant environments, such as their workplace and personal homes, may provide critical information for designing an effective treatment program (Pommerehn et al. 2016).

PATTERNS OF APHASIA ASSESSMENT PRACTICES

The level of frequency was identified for: (a) methods to obtain client case history and background information, (b) assessed language abilities according to modalities, (c) methods to determine levels of language and communication skills, and (d) contexts of aphasia evaluation (Table 3). In general, participants indicated that they perform all practices listed in the survey to a certain extent. Out of 57 practices, 21 of those listed were performed frequently by more than 80% of participants, which are interviewing the patient/caregiver for a case history, accessing medical records, assessing auditory language comprehension, assessing spoken language abilities, assessing word and sentence repetition, conducting informal assessments by observing language and communication functions and applying dynamic assessments, and conducting assessments at a clinical setting.

In this study, Malaysian SLTs frequently obtain case history and background information through patient/caregiver interviews and medical records. This may indicate their perceptions regarding the importance of family members and other professionals in ensuring a successful aphasia intervention. Shrubsole et al. (2017) recommended for involvement and collaboration of SLTs with PWA and individuals relevant to their intervention as a standard practice in aphasia rehabilitation. Involvement of family and caregivers in speech-language management of aphasia is crucial to ensure positive intervention outcomes following the carry-over of SLTs' recommendations outside of the clinic (Hallé et al. 2014).

Unlike involvement with PWAs' families, a collaboration of SLT participants with other healthcare professionals was reportedly less direct, where participants rely more on professional reports rather than direct discussion with other professionals. It is noted that most participants work in an acute public hospital, where caseloads tend to be larger. Horton et al. (2016) argued that in busy acute hospitals, SLTs and non-SLT professionals might only confer on select cases. More recently, Cardinal et al. (2020) emphasized that direct communication with professionals from other disciplines may support an in-depth understanding of patients' conditions, as well as needs, facilitators, and barriers that may impact aphasia recovery.

Assessments of reading comprehension and written expressions were found to be conducted in a less consistent manner among participants. A lesser focus on reading and writing abilities may be because SLTs have limited time to complete assessments during the initial session. In other

countries, limited time with individual patients has reportedly been a challenge for SLTs, not only in assessing PWA but also in providing treatment (Klippi et al. 2012; Rose & Attard 2015; Tiwari & Krishnan 2011). While initial evaluation findings are useful for determining the presence and severity of aphasia, continuous evaluations are equally important for ensuring appropriate treatment of aphasia because language and communication abilities of PWA change over time (Holland et al. 2017; Simmons-Mackie et al. 2005).

While 53.1% of participants indicated to use standardized assessments, only a few tests were used more frequently by them, which are Boston Diagnostic Aphasia Examination (BDAE), the Psycholinguistic Assessment of Language Processing in Aphasia (PALPA), Bedside Evaluation Screening Test (BEST), and the Comprehensive Aphasia Test. More than 80% of participants have never used other tests listed in the survey. Although participants frequently observe the language and communication abilities of PWA, and conduct dynamic assessments; language sampling, criterion-based assessments, and processing-dependent assessments were conducted less frequently. Criterion-based assessments are useful to increase the reliability of assessment findings across different SLTs who employ the same criterion and processing-dependent assessments provide insights on non-linguistic cognitive processing that may influence language comprehension and production skills (Hallowell 2022). Informal assessment findings can be subjected to examiner's bias; thus, methods that improves reliability and provide additional insights to PWAs' abilities are recommended.

TABLE 3. Percentages and numbers of participants according to aphasia assessment practices

Assessment practices	Level of Frequency (% , n)		
	Never	Less frequent	Frequent
1. Methods for obtaining case history and background information			
(a) Interviewing patient/caregiver for case history	0.0, 0	9.4, 3	90.6, 29
(b) Accessing medical records for case information	3.1, 1	6.3, 2	90.6, 29
(c) Discussing cases with other professionals	15.6, 5	40.6, 13	43.8, 14
2. Assessed language abilities according to modalities			
(a) Auditory language comprehension			
• Understanding Yes-No questions	0.0, 0	0.0, 0	100.0, 32
• Basic word comprehension	0.0, 0	3.1, 1	96.9, 31
• Following basic commands	0.0, 0	3.1, 1	96.9, 31
• Following complex commands	0.0, 0	6.3, 2	93.8, 30
(b) Spoken language/oral expression			
• Non-verbal agility	0.0, 0	9.4, 3	90.6, 29
• Verbal agility	0.0, 0	9.4, 3	90.6, 29
• Automatized sequences	0.0, 0	12.5, 4	87.5, 28

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• Object/picture naming	0.0, 0	3.1, 1	96.9, 31
• Responsive naming	0.0, 0	3.1, 1	96.9, 31
• Simple social responses	0.0, 0	0.0, 0	100.0, 32
• Spontaneous speech	0.0, 0	3.1, 1	96.9, 31
• Picture description	0.0, 0	12.5, 4	87.5, 28
• Recitation, melody, and rhythm	3.1, 1	31.3, 10	65.6, 21
(c) Reading comprehension			
• Matching alphabets/numbers	3.1, 1	40.7, 13	56.2, 18
• Recognizing alphabets/numbers	0.0, 0	31.3, 10	68.8, 22
• Matching picture to written words	3.1, 1	21.9, 7	75.0, 24
• Lexical decision	3.1, 1	50.0, 16	46.9, 15
• Reading written words orally	3.1, 1	50.0, 16	46.9, 15
• Reading written sentences orally	3.1, 1	34.4, 11	62.5, 20
• Understanding written sentences	3.1, 1	35.5, 12	59.4, 19
(d) Written expression			
• Mechanics of writing	0.0, 0	34.4, 11	65.6, 21
• Writing regular word	6.3, 2	28.1, 9	65.6, 21
• Writing irregular word	3.1, 1	68.8, 22	28.1, 9
• Writing nonsense word	25.0, 8	59.4, 19	15.6, 5
• Oral spelling	9.4, 3	43.8, 14	46.9, 15
• Picture naming via writing	6.3, 2	31.3, 10	62.5, 20
(e) Repetition			
Single real words	0.0, 0	6.3, 2	93.8, 30
Nonsense words	3.1, 1	37.5, 12	59.4, 19
Sentences	0.0, 0	12.5, 4	87.5, 28
Methods of language and communication testing			
Unstructured/informal assessment	0.0, 0	0.0, 0	100.0, 32
Collection of language samples	9.4, 3	46.9, 15	43.8, 14
Observation of language and communication functions	0.0, 0	0.0, 0	100.0, 32
Non-standardized testing	0.0, 0	0.0, 0	100.0, 32
Criterion-based approach	9.4, 3	50.0, 16	40.6, 13
Dynamic assessment approach	3.1, 1	9.4, 3	87.5, 28
Processing-dependent approach	21.9, 7	40.6, 13	37.5, 12
Structured/standardized assessment	25.0, 8	21.9, 7	53.1, 17
Aphasia Battery for Adults	96.9, 31	3.1, 1	0.0, 0
Bedside Evaluation Screening Test	65.6, 21	28.1, 9	6.3, 2
Boston Assessment of Severe Aphasia	96.9, 31	3.1, 1	0.0, 0
Boston Diagnostic Aphasia Examination	53.1, 17	28.1, 9	18.8, 6
Communicative Activities of Daily Living	90.6, 29	6.3, 2	3.1, 1
The Comprehensive Aphasia Test	78.1, 25	9.4, 3	12.5, 4
Discourse Comprehension Test	96.9, 31	3.1, 1	0.0, 0
Examining for Aphasia	96.9, 31	3.1, 1	0.0, 0
Psycholinguistic Assessment of Language Processing in Aphasia	65.5, 21	18.8, 6	15.6, 5
Quick Assessment for Aphasia	84.4, 27	9.4, 3	6.3, 2
Reading Comprehension Battery for Aphasia	90.6, 29	6.3, 2	3.1, 1
The Revised Token Test	93.8, 30	0.0, 0	6.3, 2
Western Aphasia Battery	81.3, 26	6.3, 2	12.5, 4
Contexts of aphasia assessments			

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Clinical setting (hospital/rehabilitation center)	0.0, 0	9.4, 3	90.6, 29
Personal home/living space	78.1, 25	12.5, 4	9.4, 3
Places other than above	18.8, 6	59.4, 19	21.8, 7
Methods of language and communication testing			
Unstructured/informal assessment	0.0, 0	0.0, 0	100.0, 32
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Western Aphasia Battery	81.3, 26	6.3, 2	12.5, 4
Contexts of aphasia assessments			
Clinical setting (hospital/rehabilitation center)	0.0, 0	9.4, 3	90.6, 29
Personal home/living space	78.1, 25	12.5, 4	9.4, 3
Places other than above	18.8, 6	59.4, 19	21.8, 7
Psycholinguistic Assessment of Language Processing in Aphasia	65.5, 21	18.8, 6	15.6, 5
Quick Assessment for Aphasia	84.4, 27	9.4, 3	6.3, 2
Reading Comprehension Battery for Aphasia	90.6, 29	6.3, 2	3.1, 1
The Revised Token Test	93.8, 30	0.0, 0	6.3, 2
Western Aphasia Battery	81.3, 26	6.3, 2	12.5, 4
Contexts of aphasia assessments			
Clinical setting (hospital/rehabilitation center)	0.0, 0	9.4, 3	90.6, 29
Personal home/living space	78.1, 25	12.5, 4	9.4, 3
Places other than above	18.8, 6	59.4, 19	21.8, 7

Note. Bolded items are practices performed by at least 80% of participants.

CHALLENGES IN APHASIA ASSESSMENT

The proportion for each challenge as rated by the participants is shown in Table 4. Three challenges were identified as being experienced by at least half of the participants; each challenge has the highest proportion for its respective category. The two most prominent challenges

were identified by twenty participants (62.5%), which were language differences between PWA and clinicians (cultural-linguistic barriers category) and a lack of standardized tools for aphasia evaluation (support and resource limitations category). Fewer than 10 participants identified lack of appropriate infrastructure, continuing education resources and access to trained translators as challenges related to aphasia assessment practices.

TABLE 4 Percentage and number of participants indicating specific challenges in aphasia assessment

Challenge in aphasia management	% (n)
Cultural-linguistic barriers	
Differences of dominant language of PWA versus clinicians	62.5% (20)
Differences of cultural values of PWA versus clinicians	37.5% (12)
Support and resource limitations	
Lack of appropriate infrastructure	15.6% (5)
Lack of standardized assessment tools	62.5% (20)
Limited access to continuing education resources	21.9% (7)
Limited access to trained translators	9.4% (3)
Clinical competency limitations	
Lack of knowledge on updated information	50.0% (16)
Lack of clinical skills	37.5% (12)
Lack of confidence	34.4% (11)

Note. Participant were allowed to select one or more challenges for each category.

In conducting language evaluation, SLTs commonly translate and adapt an assessment tool developed and normed based on an English-speaking population (Centeno 2015; Guo et. al. 2014; Paradis 2011). The complexity of the processes involved in translating and adapting standardized English language tools is well acknowledged (Ivanova & Hallowell 2013). SLTs are required to consider various attributes associated with diverse cultures, linguistic features (including semantics, grammaticality, and syntactic structures), and factors that may influence performance levels in those tests, such as item familiarity, word frequency, and age of word acquisition (Centeno 2015; Ivanova & Hallowell 2013). Because linguistic and cultural aspects must be considered when adapting English tools to local languages, the progress of resource development for aphasia evaluation tends to be slow, thus, affecting the availability of standardized language tools for local populations. Additionally, lack of expertise and financial support may also restrict the development of tools for aphasia evaluation (Ahmad et. al. 2013; Chu et al. 2019).

STRATEGIES FOR IMPROVING APHASIA ASSESSMENT PRACTICES

Two themes were discovered based on participants' responses to the survey's final question: What kinds of improvements can be made to enhance the assessment practices in aphasia. The theme labelled Personal Strategies consisted of suggestions that can be addressed by the participants themselves, while the External Strategies were based on suggestions that require support from other parties. Two Personal Strategies were identified: "involvement in life-long learning" and "increasing collaboration with others."

Several participants highlighted the importance of knowledge related to recent developments in aphasia assessment to improve their skills and competency in providing services to PWA. A few participants also stated that attitudes toward life-long learning may influence SLTs' involvement in continuing education opportunities. According to one participant (P01), "Continuing education is important to improve clinical skills and SLTs need to be open when learning new things." In terms of collaboration with others, participants identified three groups that should collaborate: (a) Malaysian SLTs who aim to specialize in aphasia intervention, (b) SLTs, and PWAs' caregivers and families, and (c) SLTs and other healthcare professionals. One participant stated that an association focusing on aphasia that includes SLTs, relevant healthcare professionals, PWA and their families, and caregivers is needed to improve aphasia assessment and treatment practices.

For External Strategies, two categories were identified: "opportunities to improve knowledge and skills" and "improvement of access to resources." Regarding the first category (opportunities to improve knowledge and skills), one participant (P01) suggested that training on aphasia assessment approaches and methods should be offered more frequently within and outside their employment organization. Several participants stated that training is needed for them to learn specific assessment procedures, while others mentioned the need for practical training involving PWA. In terms of the second category (improvement of access to resources), many participants suggested that standardized assessments based on the local languages and cultures must be made available to improve aphasia assessment practices.

Previously, researchers have suggested the adaptation of tools that are generally neutral in terms of the stimuli used in testing (Türkyılmaz & Belgin 2012). For example, the Revised Token Test (McNeil 1978) primarily includes basic colors, prepositions, and shapes for its language stimuli. This may address the limitation of appropriate assessment tools in Malaysia. Another strategy for addressing linguistic and cultural challenges is by applying discourse analysis approaches, where SLTs collect language and communication samples within and outside of clinical contexts (Kong 2011). Discourse analysis was found to provide SLTs with an accurate diagnosis of aphasia, as well as its types and severity (Kong & Wong 2018). However, discourse analysis requires training to acquire specific skills for eliciting language and communication samples and analyzing content and linguistic characteristics accurately (Bryant et. al. 2019).

CONCLUSION

Overall, this study serves as a snapshot of the aphasia assessment practices of Malaysian SLTs. Based on our investigation, it was found that Malaysian SLTs' practices have similarities to the practices of SLTs in other countries in certain aspects of aphasia assessment. Four trends were identified in the present study. Firstly, participants consistently obtained case history and background information through patient/caregiver interviews and medical records. Secondly, SLTs focused their evaluation on auditory language comprehension, spoken language/verbal expression, and repetition of words and sentences. Thirdly, SLTs were found to rely on unstructured and informal means to evaluate PWAs' language and communication abilities, especially through observations of language and communication functions, and dynamic assessments. Finally, the evaluation of aphasia was found

to be primarily limited to clinical settings. In terms of challenges identified by the participants, it can be inferred that linguistic barriers and a lack of standardized language tools are interrelated.

Rooms for improvement are available and can be pursued by all relevant parties. Recommendations by participants and previous researchers should be taken into consideration by policymakers and stakeholders to improve local aphasia resources toward a greater quality of service. However, it is also crucial that SLTs actively design assessment programs that not only evaluate language and communication impairments in clinical settings, but also assessing PWAs' abilities to take part in social and personally relevant activities. Malaysian SLTs may need to identify strategies to increase opportunities to communicate with other professionals for better aphasia management. Continuous assessments should be a practice employed by Malaysian SLTs to address components that have not been thoroughly evaluated during the initial session and for further modification of treatment plans.

We acknowledge that the present study only focused on the evaluation of language functions in aphasia assessment, challenges faced by SLTs, and improvement strategies based on SLTs' perceptions. This study did not explore Malaysian SLTs' practices in evaluating communication access, and the social and psychological impacts of aphasia on PWA and their caregivers. Future studies may investigate SLTs' practices in evaluating the impacts of communication impairment on the lives of PWA, factors that may affect aphasia recovery, and opportunities for PWA to participate in social and personally relevant activities.

ACKNOWLEDGEMENTS

We thank Universiti Kebangsaan Malaysia, especially the faculty members of the Speech Sciences Program for their feedback on the study design and for providing physical support to conduct this study. We are grateful for the time and cooperation of the participants. We appreciate the feedback received from Professor Dr. Sharanjeet Kaur for improving the quality of the manuscript. Finally, we thank Mrs. Nor Ayuslinawati Che Sidik for helping with the editing and formatting of the manuscript.

DECLARATION OF INTEREST STATEMENT

The first, third, and fourth authors are salaried employees whose positions require publication of research. The second

author completed the study as part of her honor's thesis requirement. None of the authors receive funding for this study.

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