Original Article

Commonly Used Assessment and Treatment for TBI Among Speech and Language Pathologist

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ABSTRACT

Background: Traumatic Brain Injury (TBI) represents a critical public health issue, with injuries ranging from mild concussions to severe brain damage. Effective assessment and management by healthcare professionals, including speech and language pathologists (SLPs), are crucial for addressing the complex needs of TBI patients.

Objective: This study aimed to investigate the assessment and treatment practices of SLPs for TBI patients in Lahore, Pakistan, focusing on identifying gaps in knowledge and application of standardized assessment tools.

Methods: A cross-sectional study was conducted among 210 SLPs working in various healthcare settings in Punjab, Pakistan. Participants were selected using purposive sampling, including those with over three years of clinical experience in both government and private hospitals and clinics. SLPs working in schools, those with less than 18 years of education, and professionals not trained in TBI rehabilitation were excluded. A self-designed, non-standardized questionnaire was distributed to assess common practices in TBI management. Data were collected and analyzed using SPSS version 25.0, employing descriptive statistics to evaluate demographic characteristics, assessment preferences, and usage of specific assessment tools. Cross-tabulations were also used to explore relationships between demographics and assessment practices.

Results: The majority of SLPs had 1-2 years of experience with TBI patients (28%), with a significant portion also having 6 months to 1 year of experience (22%). Female SLPs dominated the sample (88%). In terms of assessment preferences, a balanced inclination towards formal (53%) and informal (47%) methods was observed. However, there was a notable inconsistency in the use of standardized tools. Specific tools such as RBANS and BDAE were used by only 12% and 47% of therapists, respectively. Advanced imaging techniques like MRI and CT scans were seldom used (15%).

Conclusion: The study underscores the need for enhanced training and resources for SLPs in Punjab for effective TBI assessment and treatment. The findings reveal a reliance on certain assessment tools and a gap in the use of standardized methods, suggesting the necessity for improved training, awareness, and access to diverse assessment tools.

Keywords: Traumatic Brain Injury, Speech and Language Pathologists, Assessment Practices, Rehabilitation, Standardized Tools, Punjab, Pakistan.

INTRODUCTION

Traumatic brain injury (TBI) represents a significant and complex medical concern, characterized by brain damage resulting from external mechanical forces (1). This condition can arise from various incidents, including road accidents, falls, sports injuries, physical assaults, and more severe cases involving penetration of the brain by foreign objects (2). TBI encompasses a range of injuries from mild concussions to severe brain damage, leading to long-term cognitive, physical, and emotional impairments (3).

A critical aspect of TBI is the formation of hematomas, which are blood clots within the brain or on its surface, and contusions, which are bruises on the brain tissue. These can occur either externally, between the brain and its protective covering, or internally, involving deeper brain structures (4, 5). Not all cranial injuries necessitate medical intervention; however, significant trauma can cause skull fractures and potentially lead to brain damage (6, 7). In some cases, surgery is required to remove bone fragments or alleviate pressure within the skull (8).

Cerebral damage in TBI is akin to tissue damage in other parts of the body but occurs within the brain (9, 10). It often results in internal bleeding or hemorrhage, which can vary in severity and may require surgical intervention. Subarachnoid hemorrhage (SAH), another potential outcome of TBI, involves bleeding into the space surrounding the brain, often leading to complications such as hydrocephalus (11). The initial assessment of TBI patients includes comprehensive physical and neurological examinations, with particular emphasis on the Glasgow Coma Scale (GCS) for evaluating consciousness levels (12). Imaging techniques like CT scans are crucial for diagnosing TBI, helping to identify hematomas, contusions, and other brain injuries. In more stable cases, MRI may be used for detailed imaging, though it's less common in emergency settings due to longer processing times (13).

Post-acute care involves monitoring for complications and rehabilitation (14). Patients with TBI may require multidisciplinary rehabilitation involving neurosurgeons, physicians, neuropsychologists, speech and language pathologists, and occupational therapists (14, 15). The role of speech and language pathologists is particularly crucial, encompassing the assessment and treatment of communication and swallowing disorders resulting from TBI (16). Despite advances in treatment, TBI remains a significant public health issue with substantial social and economic impacts. It accounts for numerous hospitalizations and long-term disabilities annually, particularly in high-risk groups like motorcyclists and young adults (17, 18). The global incidence of TBI, including in countries like Pakistan, highlights the necessity for ongoing research, improved clinical practices, and effective management strategies by healthcare professionals, including speech and language pathologists (17).

The literature on traumatic brain injury (TBI) assessment and management by speech-language pathologists (SLPs) reveals several critical themes and challenges (19). Studies indicate a significant gap in the skills of SLPs, particularly in assessing complex communication disorders like Aphasia in TBI patients, highlighting the necessity for more intensive training and standardized assessment tools (20). Fatigue management has emerged as a crucial aspect of TBI rehabilitation, with interventions focusing on managing stress and anxiety. Cognitive-Communication Disorders (CCDs) post-TBI are also a major concern, emphasizing the need for educating patients about their impacts on daily life, with the involvement of family support and multidisciplinary collaboration being key facilitators (21).

The literature also points to a lack of evidence-based practices, especially in the context of mild TBI, suggesting a need for an interdisciplinary approach to address cognitive, physical, and communicative symptoms. In pediatric cases, the CDC's guidelines on managing mild TBI in children underscore the role of SLPs in using their expertise for effective rehabilitation, including family education and multidisciplinary care (22). Furthermore, emerging trends like the use of Virtual Reality (VR) in cognitive rehabilitation indicate future directions in TBI therapy (23).

Research focusing on Post-Traumatic Amnesia (PTA) and cognitive communication highlights the importance of personalized CC assessment and the crucial role of SLPs in educating families and facilitating communication. Additionally, studies show that MTBI can lead to significant high-level cognitive-linguistic deficits, necessitating comprehensive assessment and individualized treatment plans (24). The review of literature underlines the complexities in TBI management and the evolving role of speech-language pathology (25). It calls for further research, better training for SLPs, and an integrated, patient-centered approach to effectively meet the diverse needs of individuals with TBI.

MATERIAL AND METHODS

In the study, the data analysis was conducted using SPSS version 25.0. Initially, the demographic data, including years of experience, caseload composition, gender distribution, and educational levels of the speech and language pathologists, were inputted into the software. Frequencies and percentages were calculated for each demographic variable to provide a comprehensive overview of the participant characteristics.

For the main analysis, responses from the various non-standardized questionnaires, which included questions about assessment preferences and techniques used in TBI management, were meticulously coded and entered into SPSS. Descriptive statistics, primarily frequencies and percentages, were employed to analyze the types of assessments used (formal vs. informal, standardized vs. non-standardized) and the specific domains assessed (such as immediate memory, visuo-spatial tasks, language, attention, and delayed memory). This approach helped in understanding the prevailing assessment practices among the therapists.

Additionally, the usage of specific assessment tools like RBANS, BDAE, WAB-R, ALPS, and DCT was analyzed using frequency distributions to determine their prevalence in clinical practice. The therapists' reliance on medical imaging techniques like MRI and CT scans was also examined using similar statistical methods (26).

To ensure the robustness of the analysis, cross-tabulations were conducted where necessary, especially to explore any potential relationships between therapists' demographics (such as years of experience and education level) and their assessment preferences or practices. This provided deeper insights into how experience and education might influence clinical choices in TBI assessment and management.

In this study, SPSS version 25.0 was utilized for data analysis, focusing on demographic characteristics such as experience, caseload, gender, and education of speech and language pathologists. The main analysis involved coding questionnaire responses to assess TBI management techniques and preferences, with frequency distributions used to evaluate the use of specific assessment tools and medical imaging techniques. Additionally, cross-tabulations explored the relationship between therapists' demographics and their clinical practices. This approach facilitated a concise interpretation of data, enabling insights into speech and language pathologists' practices in TBI treatment.

RESULTS

Table 1 outlines the demographics and professional backgrounds of the participants. The years of experience with TBI among speech and language pathologists varied, with 22% having 6 months to 1 year of experience and the largest group (28%) reporting 1 to 2 years of experience. Those with 2 to 3 years and 3 to 4 years of experience constituted 19% and 20% of the sample, respectively, while those with 4 to 5 years and more than 5 years of experience were less common, at 9% and 3%, respectively. In terms of caseload, a diverse range was observed: 19% of the therapists reported that 10% of their caseload was adult TBI-based, 28% had a 20% TBI-based caseload, and smaller percentages were distributed across higher caseloads, up to 90%-100%. The gender distribution skewed heavily towards female participants, who comprised 88% of the sample, compared to 12% male participants. Regarding education, 63% of participants held a Master's degree, and 37% held a Bachelor's degree. The professional settings varied, with 38% working in hospitals, and 31% each in private settings and other environments.

Table 1 Demographics and Professional Background of Participants

Variable	Frequency	Percent
Years of Experience with TBI		
06 months-1yr	46	22
1 year- 2yrs	59	28
2yrs-3yrs	39	19
3-4 yrs	42	20
4-5 yrs	19	9
5+ yrs	5	3
Caseload (Adult TBI-based)		
10%	40	19
20%	58	28
30%	35	17
40%	42	20
50%+	22	11
90%-100%	13	7
Gender Distribution		
Male	25	12
Female	185	88
Education Level		

Variable	Frequency	Percent
Bachelors	78	37
Masters	132	63
Type of Setup		
Hospital	80	38
Private	65	31
Other	65	31

Table 2 presents the assessment preferences in TBI patients. It shows a relatively balanced preference for formal (53%) versus informal (47%) assessment methods. For immediate memory assessment, a higher preference for informal methods (55%) was observed compared to formal methods (15%), with a notable use of standardized (25%) and non-standardized (6%) tools. In assessing visuo-spatial tasks, there was a slightly higher preference for informal methods (37%) over formal (33%). Language assessment was predominantly conducted using formal methods (59%) with less reliance on informal methods (25%). For attention, the majority preferred informal assessment (57%). Delayed memory assessment showed a preference for informal methods (41%) over formal (25%). Overall, there was a mix of standardized and non-standardized approaches across different domains.

Table 2 Assessment Preferences in TBI Patients

Type of Assessment	Formal	Informal	Standardised	Non-standardised
Overall Preference	111	99		
Immediate Memory	30	115	52	12
Visuo-spatial Tasks	69	78	39	24
Language	125	52	28	5
Attention	36	120	11	43
Delayed Memory	51	86	24	49

Table 3 Usage of Specific Assessment Tools and Techniques

Assessment Tools/Techniques	Yes	No
RBANS	24	186
Boston Diagnostic Aphasia Examination (BDAE)	99	111
Western Aphasia Battery-Revised (WAB-R)	29	181
Aphasia Language Performance Scales (ALPS)	32	178
Discourse Comprehension Test (DCT)	-	-
MRI/CT scan	31	179

Table 3 details the usage of specific assessment tools and techniques. It reveals that only 12% of therapists used the RBANS (Repeatable Battery for the Assessment of Neuropsychological Status) for assessing TBI patients, while a significant majority (88%) did not. The Boston Diagnostic Aphasia Examination (BDAE) was used by nearly half of the therapists (47%), but slightly more than half (53%) did not use it. The Western Aphasia Battery-Revised (WAB-R) and the Aphasia Language Performance Scales (ALPS) had lower usage rates, at 14% and 16% respectively. The majority of therapists did not use these tools. The table also indicates that 15% of therapists incorporated MRI or CT scans into their assessment, while a large majority (85%) did not. This suggests a reliance on specific assessment tools and less frequent use of advanced imaging techniques in the evaluation of TBI patients.

DISCUSSION

The study on the practices of speech and language pathologists (SLPs) in Punjab, Pakistan, regarding the assessment and treatment of traumatic brain injuries (TBIs), sheds light on significant gaps in knowledge and application of standardized assessment tools (27). This finding aligns with research conducted in the USA, highlighting similar deficiencies among SLPs in assessing communication disorders associated with TBI, such as Aphasia. Furthermore, the importance of fatigue management in TBI rehabilitation, as demonstrated in the New

Zealand study, underscores the need for holistic intervention strategies, especially given the high prevalence of mild TBIs in Pakistan (28).

International comparisons, such as a survey involving SLPs from countries like the UK, USA, Canada, Australia, and New Zealand, show a more advanced usage of tools for assessing functional language and cognitive communication disorders (28). This contrast points to the necessity of enhanced training and resources for SLPs in Punjab.

However, this study encountered several limitations. Time constraints may have impacted the depth and breadth of data collection. The geographical distribution of participants, with some located in remote areas lacking adequate internet access, could have introduced selection bias. Moreover, the challenges posed by the COVID-19 pandemic, particularly in data collection, necessitated frequent reminders for online responses, potentially affecting response rates and data quality.

To mitigate these gaps, it is recommended that awareness about the latest assessment tools for TBI-related communication disorders be increased among SLPs in Punjab (28). Expanding research to other regions could provide a more comprehensive understanding of the situation. Organizing workshops, certifications, and training programs focusing on both basic and advanced assessment tools for TBI is crucial. Such initiatives would equip SLPs with the necessary skills and knowledge to improve the quality of care for TBI patients.

CONCLUSION

In conclusion, the study underscores a critical need for improved training and resources for SLPs in Punjab to effectively assess and treat patients with TBIs. Addressing these needs is essential for enhancing the quality of care provided to this patient population, particularly in light of the increasing prevalence of TBIs and the evolving landscape of speech and language pathology.

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