

Critical Review:

The speech-language pathologist's role in pediatric mild traumatic brain injury: An argument for standardization of clinical education and practice

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This review examines the current literature regarding the role of speech-language pathologists (SLPs) on interdisciplinary teams assembled to provide care to youths who have sustained mild traumatic brain injuries (mTBIs). Study designs include surveys, a literature review, and a document outlining a Centers for Disease Control and Prevention (CDC) report on the management of TBI in children. Most of the literature discussed references the United States. Overall, the evidence suggests that, although the vast majority of SLPs acknowledge that providing services to TBI patients is within their scope of practice, many SLPs are not confident in their abilities to do so. Furthermore, there is a lack of consistency in assessment and intervention procedures among practicing SLPs, which can be detrimental to patient care. Recommendations for future clinical education and practice are provided.

Introduction

Williams-Butler and Cantu (2019) define concussion as “a traumatic brain injury caused by biomechanical forces” (p. 880). It is common practice in the literature to use the terms concussion and mild traumatic brain injury (mTBI) interchangeably; this paper will follow suit. Concussion management is currently considered the fastest growing neuropsychology subdiscipline (Duff & Stuck, 2015). Although most children make full recoveries from mild traumatic brain injuries, some will experience persistent cognitive-communication impairments that contribute to reduced academic achievement and impaired social skills (Salley et al., 2019; Duff & Stuck, 2015). It is within the scope of practice of a speech-language pathologist (SLP) to provide assessment and treatment of cognitive-communication deficits that arise following concussions (Williams-Butler & Cantu, 2019). However, in a survey conducted by Duff, Proctor, and Haley (2002) examining the practice patterns of SLPs who work with pediatric mTBI patients, 43% of participants rated their knowledge as “average” and only 10% rated their knowledge as “excellent”. That same study revealed that more than twenty distinct assessment tools are commonly used to evaluate children with mTBIs, many of which are inappropriate for this clinical population. Moreover, a 2015 study by Duff and Stuck found that only 21% of respondents had specific training related to mTBI and only 41% of those clinicians completed clinical education with individuals with mTBI. These survey results highlight a lack of congruence between current clinical education standards and the large scale of pediatric concussions, and inconsistency between practicing SLPs.

Limited research evidence exists regarding SLP concussion intervention; instead, most available evidence is focused on moderate-severe TBI (Williams-Butler & Cantu, 2019). Current services for pediatric mTBI are inadequate because a discrepancy often exists between the need for rehabilitation services, receipt of the necessary services, and an insufficient understanding among parents about the need for therapy following discharge from acute care centres (Haarbauer-Krupa et al., 2017). As the duties of the SLP in an interdisciplinary team continue to grow, establishing consistency in practice patterns becomes increasingly important to optimize patient outcomes (Williams-Butler & Cantu, 2019).

Objectives

The primary objective of this paper is to examine current patterns of practice among SLPs who treat pediatric concussions. The secondary objective is to explore the knowledge base of practicing SLPs to establish whether clinicians are confident in their abilities to treat pediatric concussions.

Methods

Search Strategy: Pertinent articles were found using the following online databases: PubMed, PsycInfo, and Medline. Keywords for the database searches were:
[(pediatric TBI) AND (speech-language pathology)]
[(pediatric TBI) AND (speech therapy)]
[(pediatric concussion) AND (speech-language pathology)]

The data search was limited to articles written in English and articles published since the year 2000.

Selection Criteria: Studies selected for inclusion in this review were required to examine at least one of the following: current guidelines for the management of communication deficits following pediatric mTBIs, the typical role of a SLP in treating pediatric mTBIs, or the knowledge base of practicing SLPs regarding pediatric mTBIs

Data Collection: This literature search yielded five articles that satisfied the selection criteria. Three articles employed surveys, one discussed the recently disseminated mTBI guidelines for young children from the CDC, and one utilized a literature review.

Results

Survey Studies: Several studies referenced herein utilized surveys to collect data from practicing SLPs. These studies sought to identify practice standards in pediatric mTBI management, and using a survey was an appropriate method by which to achieve this goal. Surveys are not constrained by geography and allow the investigators to gather data from a large quantity of participants.

Williams-Butler & Cantu (2019):

This study used a 10-question online survey, distributed to 79 participants from an American Speech and Hearing Association special interest group on neurogenic communication disorders. A request was distributed via the special interest group's website targeting SLPs who provided concussion care in an outpatient clinic. The questions were reviewed by an executive panel consisting of two SLPs and one neurologist to ensure relevance and clarity prior to distribution.

The first survey question asked who was responsible for providing cognitive retraining to patients diagnosed with concussion at the clinic in which each SLP was employed, and subsequent questions asked which diagnostic tests were commonly administered, what components were commonly incorporated into cognitive retraining programs, and what other components are typically included in therapy (e.g., executive functions, word retrieval, etc.).

The results of the survey revealed that the SLP was the clinician primarily responsible for providing cognitive retraining in 75.49% of cases. Notably, the results demonstrated that 16 different diagnostic tests are commonly administered during the initial evaluation of the patient. The authors explain that 25% of respondents reported using a screening tool as their primary source of assessment, which is cause for alarm as screeners are not designed to be used diagnostically

and can, therefore, underestimate the true extent of the patient's cognitive-communication deficits post-concussion. Furthermore, some SLPs reported using language assessments (e.g. the Boston Diagnostic Aphasia Assessment-3 or the Boston Naming Test) as their chief assessment tool. These assessment batteries were designed and normed to assess symptoms of aphasia and, thus, may be inappropriate for assessing patients who are concussed.

The foremost strength of this study is the method by which it recruited participants; the authors targeted SLPs who frequently worked with mTBI patients in order to ensure that the data was not skewed by clinicians who have little or no experience with mTBIs. Overall, this study is suggestive that greater consistency is needed among practicing SLPs in order to ensure positive outcomes for pediatric patients who have sustained mTBIs, although the authors acknowledge that more research is needed.

Duff, Proctor, & Haley (2002):

This study used a 33-question survey to investigate the management of mTBIs by SLPs. The authors distributed a total of 450 surveys to SLPs in North Carolina and Illinois, and 203 surveys were returned. The questions aimed to "identify how individuals with mTBI are being assessed ... determine the referral process ... describe the frequency, structure, and nature of treatment, identify how individuals with mTBI and their patients are educated ... and assess current follow-up procedures" (p. 775).

The survey responses revealed that 54% of respondents did not have clinical practicum experience working with individuals with mTBI during their graduate educations. In addition, although 83% of participants reported providing counselling to patients with mTBI, 75% felt as though their education did not adequately prepare them to do so. This alarming statistic highlights an important shortcoming in the clinical education of SLPs; many SLPs will encounter patients who have sustained mTBIs, so more education is needed to ensure clinical competency. The authors emphasise that SLPs should be trained in the principles of counselling and taught to recognize when a referral to a mental health professional is indicated.

The survey responses also indicated aphasia batteries are commonly used to assess mTBIs. Analogous to the results of the study by Williams-Butler and Cantu (2019), this study revealed that the Boston Diagnostic Aphasia Assessment and Boston Naming Test were among the 3 most commonly used assessment tools. This finding is disturbing as there are important differences between the domains targeted by aphasia

batteries and the deficits commonly observed in mTBI. Therefore, aphasia assessments do not provide the clinician with valid information on the extent of deficits post-mTBI. The authors suggest that this finding is a consequence of the lack of instruments designed to assess mTBI specifically, and the fact that few SLPs are trained to administer assessment tools that are commonly employed by neuropsychologists.

The relatively large sample size is a key strength of this study. However, the authors did not include any SLPs employed by schoolboards, and this potentially limits the representativeness of their sample. This paper is suggestive that the diagnostic assessments used by SLPs are not sensitive enough to detect deficits associated with mTBI; more research is needed regarding cognitive-communication disorders, treatment procedures, and protocols for patients with mTBI; and additional training and education for SLPs regarding management of mTBI and counselling of patients with mTBI would be beneficial.

Duff & Stuck (2014):

The authors developed a 64-question survey to assess knowledge and management of children with concussion. In total, 1000 surveys were mailed to school SLPs across 10 states, 280 surveys were returned, and 272 were used in data analysis (eight surveys were omitted because the respondent had no experience in a school setting, or the survey was returned blank). The majority of respondents worked in elementary schools (70.8%), 18% worked in junior high or middle schools, and 11.1% worked in high schools.

The survey responses revealed the following noteworthy points: more than 20% of respondents were unsure if children show better concussion recovery than adults and over 35% of respondents were unsure if cognitive rest is important for concussion recovery. Surprisingly, the authors found that TBI training did not have a statistically significant impact on the concussion knowledge of the respondents. Moreover, 67% of respondents felt uncertain that treatment for students with mTBI is effective, and 68.5% did not consider themselves to be the most knowledgeable resource in their school for information regarding concussion. In addition, 60.7% of respondents were uncertain of whether SLPs are responsible for providing intervention to children with mTBIs in a school setting, and only 21.8% were confident in their abilities to provide such treatment.

Overall, this study illustrates several important trends that exist among practicing SLPs. Although there has been an increase in training and knowledge over the past few decades, knowledge gaps still exist. Primarily,

there is still a lack of concussion training; only 21% of respondents received training in school that related directly to concussion management. Furthermore, the authors assert that SLPs possess a mix of accurate and inaccurate knowledge of concussion management, which brings their abilities to effectively treat pediatric concussion into question. Finally, there is ambiguity surrounding the schoolboard SLPs role in concussion management; explicit standards are required in order to reduce or eliminate this.

Strengths of this study include its relatively large sample size and its geographic distribution of participants. By surveying SLPs from various states, the authors obtained a sample that was representative of the entire country. However, the authors concede that some responses should be interpreted with caution, as the wording of some questions may require the respondent to make assumptions. More research is needed to examine the training and the role of schoolboard SLPs in concussion management.

Literature Review: A systematic literature review was conducted by Haarbauer-Krupa et al. (2017) to summarize the current evidence and description of healthcare and educational service delivery for children with TBI. A pediatric-adolescent task force was established and included physicians, neuropsychologists, SLPs, occupational therapists, educators, and physical therapists. The group conducted a literature search that was divided into two post-injury periods: acute care and post-acute/outpatient care. A total of 129 articles were retained after the group's initial screening process.

The review revealed several shortcomings with the current systems of care. Primarily, there is substantial variability in how children are identified as "at-risk" at the time of injury. There is variability in how the child's medical history, family circumstances, and academic performance are considered in injury assessment and care planning, and there are noteworthy inconsistencies in the communication of pertinent information between medical and educational settings. Furthermore, many children fail to receive adequate follow-up services following discharge from initial injury care. There are currently no systems in place to determine service eligibility post TBI, and children with mTBI often fail to receive school accommodations even if clinicians recommend them. There is also substantial variability in transition from healthcare to school services, which is alarming as research indicates that the return to school process is critical to the child's overall outcome. Finally, failure to identify and use TBI-related educational services is a common theme. The authors suggest that specific rehabilitation disciplines, such as SLPs, can help close the gap in

service delivery. Increasing continuity of care from healthcare to the education system would improve outcomes for children post-TBI. The authors acknowledge that all the pertinent issues surrounding the management of pediatric TBIs were not discussed in this article. Further exploration of functional outcomes and environmental factors such as facility policies is required to expand the current knowledge base. Moreover, additional research regarding systems of collaboration between healthcare providers, educators, and families of children with TBI is required. Overall, this article provides equivocal evidence that SLP services can improve patient outcomes following pediatric TBI, but more research is needed to clarify the various factors contributing to recovery.

Viewpoint Article: Brown, O'Brien, Knollman-Porter, and Wallace (2019) examined the guidelines for rehabilitation professionals surrounding the care of youth with mTBI published by the Centers for Disease Control and Prevention. Specifically, they sought to apply the recommendations to speech-language pathology practice. The authors noted that current clinical practice surrounding pediatric mTBI is often inconsistent and incohesive. Furthermore, they explain that most of the available literature pertains to sports-related injuries; few resources are available to guide post-injury care outside of these domains.

The authors suggest that SLPs can play important roles in interdisciplinary teams by identifying symptoms, making referrals to other disciplines, engaging in discussion about the impact of symptoms on the patient's function, and providing support to patients to encourage them to implement the recommendations made by other professionals. Moreover, SLPs may "serve as the liaison between teams residing in medical versus school settings and can contribute to shared decision making" (p. 1364). In the initial days following the injury, SLPs may assess cognitive-communication needs and provide supportive education or direct intervention to assist the patient. SLP intervention may target working memory, attention, executive functioning, word finding, social skills, or literacy.

Overall, the authors express concern that few children with mTBI will qualify for services and be added to the caseload of a SLP. The insidious nature of many mTBI symptoms means that these children are often not evaluated quickly enough to allow time to implement beneficial therapies or in-school modifications. Therefore, SLPs should actively advocate for their roles on interdisciplinary teams in healthcare and education early in the child's recovery process. SLPs are underutilized in serving children with mTBI; the lack of

available research renders many clinicians unsure of how to implement effective services to this cohort. Therefore, additional research is required to establish a set of uniform guidelines that could be applicable to SLPs in a variety of geographic locations and practice settings.

Discussion

The literature examined indicates that, although SLPs can play integral roles in treating children following concussions, their services are often underused (Brown et al., 2019). Given the lack of available resources to guide clinical practice, and the inconsistency in clinical education, many SLPs are unsure of their potential roles in treating pediatric concussions and a large number of SLPs report lacking confidence in their abilities to provide concussion care (Duff et al., 2002; Duff & Stuck, 2014). These findings may not be representative of speech-language pathology in Canada, but many of the recommendations could likely benefit Canadian SLPs as well as their American counterparts.

Recommendations

Based on the data outlined in the examined literature, the following are recommendations for future clinical practice:

1. Clinical education of SLPs should include basic training on concussion management (e.g. symptom identification, potential recovery trajectory, assessment options, and beneficial therapies).
2. SLPs who work on interdisciplinary teams should advocate for their role in concussion management.
3. When possible, SLPs should avoid using assessment batteries that are not designed to measure the subtle changes associated with mTBI such as the Boston Diagnostic Aphasia Assessment.
4. If a SLP does not consider herself equipped to provide therapy to a child with a concussion, she should be aware of other clinicians in her area who can provide therapy so that an appropriate and timely referral can be made.

Future Research Considerations:

Additional research is needed to determine current educational practices in speech-language pathology programs so that greater consistency can be achieved. This knowledge could help standardize clinical education so that SLPs across the country are trained similarly. In addition, more research is needed to explore how Canadian SLPs are educated on concussion management and how confident they are in their abilities to provide care to children with concussions.

References:

- Brown, J., O'Brien, K., Knollman-Porter, K., & Wallace, T. (2019). The speech-language pathologists' role in mild traumatic brain injury for middle and high school-age children: Viewpoints on guidelines from the centers for disease control and prevention. *American Journal of Speech-Language Pathology*, 28, 1363-1370. Retrieved from <https://pubs.asha.org>
- Duff, M.C., Proctor, A., & Haley, K. (2002). Mild traumatic brain injury (MTBI): assessment and treatment procedures used by speech-language pathologists (SLPs). *Brain Injury*, 16(9), 773-787. doi: 10.1080/02699050210128
- Duff, M.C., & Stuck, S. (2015). Paediatric concussion: Knowledge and practices of school speech-language pathologists. *Brain Injury*, 29(1), 64-77. doi: 10.3109/02699052.2014.965
- Haarbauer-Krupa, J., Ciccio, A., Dodd, J., Ettel, D., Kurowski, B., Lumba-Brown, A., & Suskauer, S. (2017). Service delivery in the healthcare and educational systems for children following traumatic brain injury: Gaps in care. *J Head Trauma Rehabil.*, 32(6), 367-377. doi: 10.1097/HTR.00000000000002
- Williams-Butler, M., & Cantu, R.C. (2019). Concussion practice patterns among speech-language pathologists. *Health*, 11, 880-895. doi: 10.4236/health.2019.117071