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Healthcare providers' attitudes and behaviours related to paediatric mild traumatic brain injury: results from the 2014 DocStyles survey

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Abstract

Objective: Explore healthcare providers' experiences managing mTBI and better understand their use of mTBI assessment tools and guidelines.

Cross-sectional Methods: A random sample of 1,760 healthcare providers responded to the web-based DocStyles survey between June 18 and 30, 2014. The sample included family/general practitioners, internists, pediatricians, and nurse practitioners who reported seeing pediatric patients. We examined their experiences with mTBI to identify opportunities to increase preparedness and improve management of mTBI.

Results: Fifty-nine percent of healthcare providers reported that they diagnosed or managed pediatric patients with mTBI within the last 12 months. Of those, 44.4% felt 'very prepared' to make decisions about when pediatric patients can safety return to activities, such as school and sports after a mTBI. When asked how often they use screening or assessment tools to assess pediatric patients with mTBI, almost half reported that they 'seldom' or 'never' use those resources (24.6% and 22.0%, respectively).

Conclusion: Most healthcare providers reported seeing pediatric patients with mTBI, yet most feel only somewhat prepared to manage this injury in their practise. Broader use of screening tools and guidelines, that include clinical decision support tools, may be useful for healthcare providers who care for pediatric patients with mTBI.

Keywords

concussion; healthcare providers; attitudes; behaviors

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Declaration of Interest

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Introduction

A mild traumatic brain injury (mTBI), including concussion, is caused by a bump, blow or jolt to the head or body that causes the head to move rapidly back and forth (1). While most who sustain a mTBI will have a good recovery, for some, a mTBI can lead to serious short and long-term problems with how a person thinks, acts, learns and feels. Appropriate diagnosis of mTBI can help mitigate the risk for adverse outcomes from this injury. However, a recent study found healthcare providers may not have adequate training to address this injury (2).

Healthcare providers also play a critical role in active management of patients as they return to their regular activities, such as school and sports. This includes providing symptom-based management plans and promoting prevention strategies to protect their patients from future injury. To do this well, healthcare providers need knowledge, decision-support tools, and other resources to support the care of their patients (2). Yet, recent studies indicate that healthcare providers may not use available practise guidelines and resources (3,4). A 2013 survey of emergency department physicians found that 35% of physicians did not use evidence-based clinical practise guidelines to manage mTBI (3). Another survey of paediatricians in Illinois found that only 14.6% used mTBI guidelines in their practise (4).

To better understand healthcare providers' experiences with mTBI, including concussion, this study reports on a sample of healthcare providers who treat paediatric patients in their practises. Specifically, we describe healthcare providers' past experiences, including:

- diagnosing and managing mTBI and/or concussion with their patients,
- decision-making related to mTBI and/or concussion
- discussing mTBI and/or concussion with their patients and
- using assessment tools and resources.

The purpose of this study was to explore healthcare providers' experiences with mTBI across specialties in order to identify opportunities to increase their preparedness to diagnose and manage this injury.

Methods

From 18 June to 30 June, 2014 Porter Novelli Public Services[1] conducted DocStyles, a Web based survey with a random sample of healthcare providers from WorldOne's Global Medical Panel.[2] The sample includes over 270,000 physicians and over 1,000,000 medical professionals in the United States. Healthcare providers in the sample are selected to match American Medical Association (AMA) Masterfile proportions related to age, gender and region. The Centers for Disease Control and Prevention has determined that the DocStyles survey is exempt from human subjects' research regulations and does not need IRB review.

[1]Porter Novelli Public Services is a public relations firm that has a specialty practice in health and social marketing. 1909 K St, NW, Suite 400, Washington, DC 20006 http://www.porternovelli.com.
[2]WorldOne is a global market research company. http://www.worldone.com.

The DocStyles survey was developed by Porter Novelli Public Services and contained 91 questions, some with multiple subparts. The survey is designed to provide insight into healthcare providers' attitudes and behaviours in regard to a variety of health issues, and to assess their use and trust of available health information sources. A total of 2,512 health professionals were invited to participate in DocStyles. Of those, 1,760 participated in the survey. Among them, 1,123 reported that they saw paediatric patients in their practise and were subsequently asked five questions about mTBI, including concussion (hereafter referred to as mTBI). Only the health professionals who reported that they saw paediatric patients in their practice were presented with the questions about mTBI. Respondents represented the following specialties: family/general practitioners, internists, paediatricians, and for at least 3 years.

The 2014 DocStyles questions about mTBI are presented below:

1. Over the last 12 months, have you diagnosed and managed any patients under 16 years of age with a mTBI and/or concussion?
2. How prepared do you feel to make decisions about when patients under 16 years of age who have a mTBI and/or concussion can safely return to activities such as school or sports?
3. Over the last 12 months, how often have you discussed with patients under 16 years of age what to do if they think they have gotten a mTBI and/or concussion while playing sports?
4. How often do you use screening or assessment tools to help assess patients under 16 years of age who may have a mTBI and/or concussion?
5. How adequate are currently available guidelines and resources for preparing you to diagnose and manage patients under 16 years of age who have a mTBI and/or concussion?

Descriptive statistics were utilized to highlight participants' self-assessed experiences with mTBI and/or concussion, including their preparedness to make decisions regarding management and frequency of having conversations about this injury with their patients. The frequency of use of screening and assessment tools, and beliefs about the adequacy of available guidelines and resources were also examined. Chi-square tests were performed to identify differences in these experiences by type of healthcare provider and in certain cases by whether the healthcare provider reported experience diagnosing or managing mTBI and/or concussion within the last 12 months. All participants reported that they actively see patients, work in an individual, group, or hospital practise, and have been practicing medicine school/sports and the adequacy of current guidelines (questions 2 and 5 above). Chi-square tests were used to explore differences between healthcare providers' responses to these questions in 2011 and 2014. In the 2011 DocStyles survey, 1,065 internists, paediatricians, family/general practitioners, and nurse practitioners reported seeing paediatric patients in their practise.

Results

A total of 1,123 respondents in the 2014 DocStyles indicated that they see paediatric patients and thus were asked questions related to mTBI. Specialties represented in the sample included: family/general practitioners (45.3%), internists (18%), paediatricians (22.4%) and nurse practitioners (14.2%) (Table 1). Healthcare providers indicated that they practised in one of three settings: individual outpatient practise (17.8%), group outpatient practise (74.4%) or inpatient practise (7.7%). Table 1 describes the characteristics of respondents who were included in the sample along with their work settings, sex, age, number of patients they see in their practises, race, ethnicity and financial situations of the majority of the patients they see.

The majority (59.3%) of healthcare providers reported than they have diagnosed or managed paediatric patients (under the age of 16) with mTBI in the last 12 months (Table 2). Healthcare providers who identified as paediatricians were the most likely to report that they have diagnosed or managed a patient with mTBI in the past 12 months: (84.1%), followed by family/general practitioners (62.9%), nurse practitioners (42.5%) and internists (32.7%). A chi-square test for independence indicated a significant association between type of practise and diagnosing of mTBI, $\chi 2\ (6) = 157.074$, $p < .001$.

Healthcare providers were asked to report how prepared they felt to make decisions about when paediatric patients with mTBI can safely return to activities such as school or sports. Overall, most healthcare providers reported that they felt ‘somewhat prepared’ (55.1%) to make decisions about when paediatric patients can safety return to school and sports. Among healthcare providers who reported they had diagnosed or managed paediatric patients (under the age of 16) with mTBI within the last 12 months, less than half (44.4%) felt ‘very prepared’ to make decisions about when paediatric patients with mTBI can safely return to activities such as school or sports (data not shown). A chi-square test for independence indicated a significant association between having diagnosed or managed paediatric patients with mTBI and preparedness to diagnose an mTBI, $\chi 2\ (6) = 241.011$, $p < .001$.

Among all healthcare providers in the sample, only 26% reported that they often discuss with their paediatric patients what to do if they get an mTBI while playing sports. Overwhelmingly, paediatricians were most likely to report that they had these conversations with patients, with 85% indicating that they had these conversations either often or occasionally (see Table 2), followed by family/general practitioners (66.8%), nurse practitioners (56.2%) and internists (46.5%).

Among healthcare providers who reported they had diagnosed or managed paediatric patients (under the age of 16) with mTBI and/or concussion within the last 12 months, 33.2% reported they ‘often’ use screening or assessment tools. With 36.0% of healthcare providers who reported using these tools ‘occasionally’, 20.0% ‘seldom’ and 20.8% ‘never’. A chi-square test for independence indicated a significant association between having diagnosed or managed paediatric patients with mTBI and use of screening or assessment tools, $\chi 2\ (6) = 221.617$, $p < .001$. Across specialties, paediatricians were most likely to use

these tools often or occasionally (67.1%), followed by family/general practitioners (53.8%), internists (43.6%) and nurse practitioners (43.2%) (see Table 2). A chi-square test for independence indicated a significant association between type of practise and frequency of use of screening or assessment tools, $\chi 2$ (9) = 65.830, $p < .001$. Chi-square tests for independence indicated no significant associations between frequency of use of screening or assessment tools and gender or race of physician, or physician's report of the typical financial situation of their patients.

When asked about the adequacy of currently available guidelines and resources to diagnose and manage paediatric patients with mTBI and/or concussion, a little more than one third of respondents reported that existing resources were somewhat adequate (36.8%) or 'adequate' (35.8%). One in ten (10.8%) respondents reported that resources were 'inadequate', and 14.9% 'didn't know'. Only a small number (1.8%) reported that 'these resources do not exist'. A chi-square test for independence indicated a significant association between specialty of healthcare provider and belief of adequacy of available guidelines, $\chi 2$ (12) = 77.718, $p < .001$.

A chi-square test for independence indicated a significant association between frequency of screening tool use and belief of adequacy of available guidelines $\chi 2$ (12) = 334.211, $p < .001$. Thus, there is a statistically significant relationship between the frequency of use of screening and assessment tools and whether healthcare providers believed the available guidelines were adequate (See Table 3). Chi-square tests for independence indicated no significant association between beliefs about the adequacy of available guidelines and gender or race of the physician, or physician's report of the typical financial situation of their patients.

In 2011 and 2014, healthcare providers who responded to the DocStyles survey also answered questions 2 and 5. No significant changes in preparedness or beliefs about existing resources were observed from 2011 to 2014 (Table 4).

Discussion

This survey explored healthcare providers' experiences with diagnosing mTBI, including concussion, among their paediatric patients. Healthcare providers', representing multiple specialties, reported on their preparedness to manage this injury and their use of and beliefs about the adequacy of screening and assessment tools and clinical guidelines.

Across specialties, more than half of healthcare providers (59.3%) reported that in the past year they had diagnosed or managed mTBI in their practise. Paediatricians were the most likely to report treating paediatric patients with this injury—with 84.1% responding that they had done so in the past 12 months. These findings are consistent with a survey of over 200 paediatricians that similarly found that 85% reported that they treat sports-related concussion in their practise (5).

In addition to having the most experience with treating mTBI, paediatricians were also most likely to report that they felt 'very prepared' to make decisions about managing paediatric patients' return to activities after this injury. Still, it is noteworthy that less than half of

paediatricians, felt ‘very prepared’ to make mTBI management decisions related to school and sports. Internists and nurse practitioners, who had the least experience with mTBI were also most likely to report that they felt ‘not prepared at all’ to make decisions about their patient’s return to activities.

This gap between paediatricians and family/general practitioners compared to internists and nurse practitioners carried throughout responses to the survey. Paediatricians and family/general practitioners tended to have more experience, higher self-assessed preparedness, and greater use of screening and assessment tools compared to internists and nurse practitioners.

Healthcare providers play a critical role in enforcing messages to children and adolescents about the importance of reporting a suspected mTBI and providing guidance on how to safely return to school and play following the injury. Encouragingly, most paediatricians (85%) and family/general practitioners (66.8%) reported discussing ‘often’ or ‘occasionally’ with their patients what to do if they think they have an mTBI. While most nurse practitioners and internists reported that they do not communicate with their patients about concussion safety, this difference may be due in part to the fact that internists and nurse practitioners in this survey were least likely to have seen a paediatric mTBI patient in the past 12 months.

A comparison between responses to two of the survey questions that were asked in both the DocStyles survey in 2011 and 2014 suggests a lack of progress. There was no perceived improvement in overall preparedness to make decisions about return to activities after an mTBI and no improvement in beliefs about the adequacy of available guidelines and resources. It is concerning that over these 3 years, healthcare providers’ beliefs about these materials have not improved.

Other research about healthcare providers’ preparedness to manage paediatric mTBI shows varying findings. Broshek et al. (2014) surveyed healthcare providers and found that only 38% of them believed that they had received adequate training about managing paediatric patients with concussion (6). Another study by Zonfrillo et al. (2012) found that nearly half (49%) of healthcare providers reported that they did not always feel comfortable with concussion management (2).

This lack of improvement in beliefs about the adequacy of these resources is disheartening given the numerous guidelines available (7–10) or developed over the past several years. It is evident from our findings that a need exists to strengthen awareness, dissemination and implementation of existing tools that aim to support healthcare providers in their clinical practise. Other studies also demonstrate that use of existing concussion guidelines is low, especially among some specialties (4,11–13). Focusing efforts on disseminating and implementing evidence based guidelines among healthcare providers may help improve attitudes about preparedness and use of tools and clinical resources.

This study is subject to a number of limitations. First, the survey did not ask about specific guidelines and tools. Future research efforts exploring specific attributes of mTBI, including concussion, guidelines and supporting tools and resources could inform targeted dissemination and implementation efforts. Second, the DocStyles sample is weighted to

match the AMA Masterfile proportions for age, sex and region, but healthcare providers are not randomly selected and thus results may not be generalizable. Third, there is no data about the volume of patients for whom each healthcare provider diagnosed and/or managed this injury. Fourth, healthcare providers reported their self-assessed experiences with mTBI and/or concussion, and this study did not verify self-reports to confirm they reflect actual experiences with patients. Finally, the survey did not collect data about specific age ranges that healthcare providers see with their patients, and this information, if collected in future studies, could indicate opportunities to tailor educational materials for healthcare providers, their patients and families, to the information needs of specific paediatric patients.

Conclusion

Our study assessed healthcare providers' beliefs in their preparedness to diagnose and manage paediatric concussion, as well as their perceptions of screening tools and guidelines. All four specialty groups surveyed may benefit from receiving educational information about mTBI that is tailored to their work setting. This information can potentially improve how prepared they feel to make decisions about mTBI among their paediatric patients. The lack of progress in beliefs about the adequacy of existing tools and resources to diagnose and manage concussion highlights the need for broader outreach and easy-to-implement tools for a variety of specialties. Importantly, the clinical support tools should include guidance on return to school and sports and be disseminated through trusted channels in order to increase their reach and implementation.

Healthcare providers are on the frontlines of caring for paediatric patients with mTBI. Creating useful clinical decision-support tools that bolster healthcare providers' preparedness to address mTBI is essential to supporting them in their practise settings. These tools should help healthcare providers apply and implement available clinical guidance and support them in overcoming the inherent challenges of diagnosing and managing paediatric mTBI.

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Table 1.

Characteristics of analytic sample (n = 1123).

	N	%
Specialty		
Family/General practitioner	509	45.3
Internist	202	18.0
Paediatrician	252	22.4
Nurse practitioner	160	14.2
Work setting		
Individual outpatient practise	200	17.8
Group outpatient practise	836	74.4
Inpatient practise	87	7.7
Number years seeing patients	Mean = 15.46 (SD = 8.516) (Range 3–50 years)	
Sex		
Male	693	61.7
Female	430	38.3
Race		
White	759	67.6
Black or African American	29	2.6
Asian	245	21.8
Native Hawaiian or other Pacific islander	2	.2
American Indian or Alaska native	5	.4
Two or more races	34	3.0
Other race	49	4.4
Hispanic or Latino		
Yes	54	4.8
Age	Mean = 46.28 (SD = 9.943) (Range 25–77 years old)	
Financial situation of the majority of your patients		
Very poor-poor	41	3.7
Poor-lower middle class	165	14.7
Lower middle class-middle class	448	39.9
Middle class - upper middle class	407	36.2
Upper middle class - affluent	62	5.5

Table 2.

Healthcare providers' attitudes and behaviours related to pediatric mTBI by specialty, 2014.

	Family/General practitioner (*n* = 509)	Internist (*n* = 202)	Paediatrician (*n* = 252)	Nurse practitioner (*n* = 160)	Total (*n* = 1123)
Past year diagnosed and managed any patients under 16 years of age with a mTBI and/or concussion					
Yes	62.9%	32.7%	84.1%	42.5%	59.3%
No	34.8%	64.4%	12.7%	56.9%	38.3%
Don't know	2.4%	3.0%	3.2%	0.6%	2.4%
Self-assessed preparedness to make decisions about when paediatric patients who have mTBI and/or concussion can safely return to activities such as school or sports					
Not prepared at all	6.3%	22.3%	3.2%	23.1%	10.9%
Somewhat prepared	61.1%	51.5%	48.8%	53.8%	55.1%
Very prepared	32.2%	18.8%	47.2%	20.0%	31.4%
Don't know	1.4%	7.4%	0.8%	3.1%	2.6%
Past year frequency of discussing with paediatric patients what to do if they think they got a concussion while playing sports, by specialty					
Often	23.8%	11.4%	42.5%	25.6%	26.0%
Occasionally	43.0%	35.1%	42.5%	30.6%	39.7%
Seldom	23.6%	24.8%	9.9%	18.1%	19.9%
Never	9.6%	28.7%	5.2%	25.6%	14.3%
Frequency of use of screening or assessment tools with patients under 16 years of age, suspected of having a mTBI and/or concussion					
Often	22.0%	11.4%	36.1%	18.8%	22.8%
Occasionally	31.8%	32.2%	31.0%	24.4%	30.6%
Seldom	27.1%	24.3%	19.4%	25.0%	24.6%
Never	19.1%	17.8%	13.5%	31.9%	22.0%
Beliefs about adequacy of currently available guidelines and resources for preparing to diagnose and manage patients under 16 years of age who have a mTBI and/or concussion					
Inadequate	11.4%	7.9%	9.9%	13.8%	10.8%
Somewhat adequate	35.8%	39.1%	40.9%	30.6%	36.8%
Adequate	39.7%	21.3%	42.5%	31.2%	35.8%
These resources do not exist	1.8%	2.5%	0.8%	2.5%	1.8%
Don't know	11.4%	29.2%	6.0%	21.9%	14.9%

Table 3.

Use of screening/assessment tools and beliefs about the adequacy of these tools, 2014.

	Inadequate	Somewhat adequate	Adequate	These Resources do not exist	Don't Know	Total
Often	8.6%	38.7%	50.4%	0.4%	2.0%	100%
Occasionally	9.3%	50.9%	37.5%	0.6%	1.7%	100%
Seldom	13.4%	36.6%	31.9%	3.6%	14.5%	100%
Never	12.1%	15.4%	22.7%	2.8%	47.0%	100%

Table 4.

Health care providers' self-assessed preparedness and beliefs about existing resources related to paediatric mTBI, 2011 vs. 2014.

	2011		2014	
	N	%	N	%
Self-assessed preparedness to make decisions about when patients under 16 years of age who have mTBI and/or concussion can safely return to activities				
Not prepared at all	121	11.4	122	10.9
Somewhat prepared	576	54.1	619	55.1
Very prepared	346	32.5	353	31.4
Don't know	22	2.1	29	2.6
Beliefs about adequacy of currently available guidelines and resources for preparing to diagnose and manage patients under 16 years of age who have an mTBI and/or concussion				
Inadequate	136	12.8	121	10.8
Somewhat adequate	412	38.7	413	36.8
Adequate	429	40.3	402	35.8
These resources do not exist	9	.8	20	1.8
Don't know	79	7.4	167	14.9
Total	1065		1123	