Survey of Primary Contact Medical and Chiropractic Clinicians on Self-Reported Knowledge and Recognition of Mild Traumatic Brain Injuries: A Pilot Study

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Abstract

Objective: The purpose of this study was to assess the self-reported knowledge of concussion recognition and treatment with first-contact family medical and chiropractic practitioners by means of a pilot study of the need, construct validity, and feasibility for further investigation of mild traumatic brain injury (MTBI) knowledge base.
Methods: Two hundred forty-eight practicing chiropractic and 120 medical physicians in the south and northeastern sections of the United States were contacted by e-mail, telephone, and postal mail to answer an 18-item survey on knowledge, diagnosis, and common practice with respect to traumatic brain injury patients. Descriptive analysis was used to assess common trends.
Results: Twenty-three chiropractic and 11 medical primary care practitioners returned completed surveys, making this a low-power pilot study. The majority claimed confidence in diagnosis of MTBI, but a lack of knowledge of many of the assessment tools and the international guidelines. Chiropractic and medical clinicians revealed similar competencies and differing deficiencies. Both groups admitted infrequent diagnosis of MTBI in practice. There was recognition of major TBI signs, but lack of recognition or inquiry for subtle MTBI signs.
Conclusions: There is a need and feasibility for further study of the knowledge transfer to the chiropractic physician with a larger population. These findings correlate with similar medical practitioner studies, and may also support previous findings of underreporting of the prevalence of MTBI. The survey instrument appears to provide valid data on knowledge of MTBIs, with some modifications. (J Chiropr Med 2016;xx:0-12)

Key Indexing Terms: *Brain Concussion; Knowledge; Diagnosis; Guideline; Primary Health Care; Chiropractic, Surveys and Questionnaires*

Introduction

Concussion prevalence has been reported as being at the epidemic level by the U.S. Centers for Disease Control and Prevention.[1] The leading causes of traumatic brain injuries (TBIs) are falls and motor vehicle accidents (MVAs).[2,3] The prevalence of concussion or mild traumatic brain injuries (MTBIs) has been reported to be 70% to 90% of all treated brain injuries,[4] with it being present in 38% of MVA hospital admissions and 46% of trauma center admissions.[5] In the age group of 15 to 44 years, MVAs are the leading cause of TBI hospital admissions.[1] The frequency of MTBIs in sports is also significant. The sport prevalence has been reported as ranging from 2.5% to 18.9% of all participants, dependent on the sport and the level of activity.[6-9] The prevalence of MTBI in both MVA and sport injury patients may actually be higher than what has been reported.[10,11] Moreau et al[11] propose that a low recognition rate by primary care chiropractic or family practitioners (PCPs) may be one of many reasons that result in underreporting. The frequency of these primary modes of injury with which people present to the PCP necessitates that the PCP have the requisite knowledge to question, evaluate, and treat MTBIs.

The type of TBI often determines the actions of the patient. A TBI is defined by the American Academy of Neurology as a trauma-induced alteration in mental status that may or may not involve a loss of consciousness.[12] The

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Table 1. *Modified Cantu Traumatic Brain Injury Classification System*

	Mild/Grade 1	Moderate/Grade 2	Severe/Grade 3
Loss of consciousness	None	<5 min	>5 min
Posttraumatic amnesia	1 hr	1-24 h	>24h
Glasgow Coma Scale	13-12	9-12	3-8
Symptoms	Transient	>15 min	Prolonged symptoms

type is graded (Table 1) as mild, moderate, or severe, contingent on the Glasgow Coma Scale, period of posttraumatic amnesia, and absence of or duration of loss of consciousness.[13-15] Patients with severe brain injuries are commonly transferred to emergency rooms, where they can be evaluated by trauma specialists. Moderate brain injuries involve loss of consciousness longer than 5 minutes[13,16] (or 30 minutes by some classifications[17]), posttraumatic amnesia lasting from 1 to 24 hours, symptoms greater than 15 minutes in duration, and an initial decrease in verbal, motor, and/or eye response.[13,15,18] These may be more likely to be recognized by the layperson who commonly seeks emergency or specialist care. However, even 63% of American Academy of Neurology member specialists have not received formal or informal training in sports neurology, including objective diagnostic criteria for concussion, and therefore may be missing some patients with delayed-onset symptoms.[19] Mild brain injuries may not always be immediately recognizable by the layperson. They may not involve any loss of consciousness; any initial change in motor, verbal, or eye response; posttraumatic amnesia of less than an hour; and only transient or no confusion.[20] Yet, these mild injuries can have other subtle signs such as selective loss of (anterograde and retrograde) memory, difficulty with continuous train of thought, cloudy thought process, decreased concentration, cognitive difficulties, transient losses of balance, disruption of sleep, fatigue, tinnitus, sensitivity to sound or light, headaches, diminished reaction time, changes in personality, and change in emotions.[15,20,21]

Some MTBIs may commonly self-resolve in 7 to 10 days. However, risks exist if there is a lack of appropriate action for some of these cases. The patient may progress to postconcussive syndrome or may unknowingly be prone to second-impact syndrome. This can have more severe consequences, including permanent neurologic injury or death.[22,23] If care is sought, the MTBI type of patient may consult his or her PCP for the initial consult for concurrent neuromusculoskeletal injuries or the mild subtle indescribable signs noticed by significant others. In fact, one study reported that 20% to 56% of MVA patients consult a chiropractor (96% consult a medical doctor) in the respective 6-week to 12-month postaccident period.[24] Early recognition of MTBI is therefore imperative.

Increased predoctoral and postdoctoral MTBI training could improve the provider's abilities in early recognition, diagnosis, and care of the MTBI patient. Previous studies reported inconsistent provider actions and insufficient training of pediatricians and emergency room physicians to adequately recognize, diagnose, and treat TBI.[25] There is a reported lack of awareness of concussion guidelines among pediatricians.[26] Other studies have reported the deficient TBI knowledge of coaches,[27,28] medical students,[29] emergency physicians, and family medical physicians.[30] Knowledge of chiropractors has not been well researched, and there is a lack of any cohort medical doctor (MD)/doctor of chiropractic (DC) studies. Specific predoctoral training in diagnosis and management of TBI is not outlined by the Council on Chiropractic Accreditation Standards[31] and may vary between different training programs. This article describes a pilot study investigating the use of a survey instrument in evaluating the degree of the primary-contact clinician's knowledge base and ability to recognize the subtle presentation of MTBI. Resulting information may indicate the need for further study that could help guide future educational programs.

Purpose

The purpose of this study was to assess a survey instrument used to assess self-reported knowledge of concussion recognition and treatment with first-contact family medical and chiropractic practitioners. The intent was to assess[1] the informative need for and feasibility of further investigation into the TBI knowledge base, and[2] the construct validity of the questionnaire as a potential measurement tool for the concept of sufficient PCP knowledge base.

Methods

To survey the professions involved, a standardized set of questions needed to be developed that would allow independent investigation of the clinician's TBI knowledge and common procedures performed with a TBI patient. The survey was designed with the objective of obtaining information on the knowledge and procedures of PCPs, when presented with a potential MTBI patient. The response rates would determine the feasibility of the targeted population. The specific question responses would help determine the content validity. The primary outcome objective was to obtain a 25% response rate for feasibility of the utilization of the recruitment population and clear consistent delineation of knowledge and correlation of responses to determine question content validity and the need for further investigation.

Instrument Development

Previous validated and published survey questions on methods of diagnosis, guideline utilization, and prognosis and