Chiropractic Physicians' Knowledge of Pediatric Concussions

Rachel A. Lamb
Cedarville University, rachellamb@cedarville.edu

Michael S. Weller
Cedarville University, mweller@cedarville.edu

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The proposed study was submitted to Cedarville University’s Institutional Review Board for the Protection of Human Subjects. The study received approval to proceed as specified on April 2, 2015. An online survey was constructed using Qualtrix software. The Youth Sports Concussion Conference Committee has recommended that chiropractors diagnose and manage concussions in accordance with the 2012 Zurich Consensus Statement on Concussion in Sport. The survey included questions regarding demographics, patient scenarios, and concussion management. The results of the study indicated that chiropractors possess the credentials required by law are more knowledgeable than those who do not. There were statistically significant differences concerning familiarity with the Graded Symptom Checklist and the Post-Concussion Symptom Scale. In addition, the results of a question regarding the implementation of graduated return-to-play protocols were found to be borderline significant.

**INTRODUCTION**

In 2014, the state of Ohio passed legislation that allows chiropractors with certain credentials to diagnose and care young athletes who have sustained concussions. Revisions of Ohio House Bill 487 specify that physicians of chiropractic sports medicine, physicians of chiropractic neurology, and certified chiropractic sports physicians are qualified to diagnose and treat concussions. As chiropractic physicians become more involved in caring for young athletes, their knowledge must be assessed to ensure that physicians of chiropractic neurology, and certified chiropractic sports physicians are qualified to care for concussed patients more frequently than those who did not. In addition, these chiropractors were more likely to report the use of guidelines such as the Zurich consensus statement. There were no significant differences among participants based on years of experience or frequency of concussions considered. However, with the exception of several small literature reviews and case studies, little is known regarding chiropractors’ knowledge including degrees in a field related to sports medicine, coaching certification, and years of experience as a team physician. Twenty participants reported the guidelines and resources that they utilized in their clinical practice. The Acute Concussion Evaluation and the American Academy of Neurology guidelines received the most responses. The American Chiropractic Board of Sports Physicians guidelines and the CTE guidelines were both mentioned twice. Finally, the Colorado guidelines received one mention.

**METHODS**

Quantitative data was collected and analyzed using SPSS 23 software. The priori alpha level was set at less than 0.05. Pearson Chi-square and Fisher’s Exact Test were used to assess differences between chiropractors who possessed the credentials required by legislation and those who did not. In addition, respondents reported the years of experience. Qualitative data from open-ended responses was analyzed for common themes and groups.

**RESULTS**

Of the 1,344 chiropractors who were contacted, 71 completed the survey. Fifteen (21.1%) possessed the credentials specified by state legislation and 56 (79.9%) did not. One half of the respondents (44.9%) reported 5 or more years of experience while 15.5% reported 5 to 10 years of experience. The majority of participants (84.4%) cared for patients of all ages. Thirty (42.3%) participants reported caring for less than 12 concussions per year, 22 (31%) managed 1 to 3 concussions per month, 2 (2.8%) cared for 1 to 3 concussions per month, and 16 (22.5%) reported no previous experience. Approximately one-third of participants (30.0%) felt very comfortable managing concussions and 28.9% felt moderately comfortable. Only 9.9% and 8.7% reported feeling slightly uncomfortable and very uncomfortable, respectively. Less than half (49.1%) of the respondents disagreed with allowing athletes to progress to the next step of a graduated return-to-play protocol following the provocation of symptoms. While 18.3% were neutral or unsure. However, the majority of respondents (85.9%) strongly agreed that same-day return-to-play should never be allowed regardless of age, activity levels, or injury severity.

There were several notable differences when results were compared by type of practice. Unsurprisingly, chiropractors who possessed the required credentials cared for concussed patients more frequently than those who did not. Those who possessed the credentials were more likely to report the use of guidelines such as the Zurich consensus statement. While there were no significant differences regarding IMpACT testing, chiropractors who possessed the required credentials reported higher levels of familiarity with the Graded Symptom Checklist as well as the Post-Concussion Symptom Scale. In addition, there were borderline significant (p=0.06) regarding progression to the next step of a graduated return-to-play protocol following the provocation of symptoms.

**DISCUSSION**

Statistically significant differences were found regarding use of guidelines and familiarity with assessment tools. Chiropractors who possessed the required credentials were more likely to be familiar with the Graded Symptom Checklist and the Post-Concussion Symptom Scale than those who did not. In addition, these chiropractors were more likely to have used guidelines in their clinical practice. Finally, although the results were deemed borderline significant, participants who possessed the required credentials were more likely to disagree with allowing an athlete to progress to the next step of a graduated return-to-play protocol following the provocation of symptoms. Of the respondents who did not possess the required credentials, 21.4% were neutral or unsure regarding this question. These results indicate that chiropractors who do not possess the required credentials are less knowledgeable regarding the implementation of return-to-play guidelines. As there were no significant differences among participants based on years of experience or frequency of concussion management, these results may be related to differences in educational requirements.

In this study, 66.7% of qualified chiropractors reported the use of guidelines but the rate dropped to 32.5% when all respondents were included. A similar study evaluating pediatricians found that 50% of those surveyed reported the use published guidelines. Because the new state legislation has been in effect for a relatively short period of time, chiropractors may not have had the opportunity to become familiar with their guidelines during their clinical practice. However, this gap will need to be addressed, particularly if state legislation expands to include all chiropractors. Although respondents showed a deficit regarding return-to-play protocols, research regarding pediatricians has demonstrated similar gaps. Only 37% of physicians were shown to correctly apply graduated return-to-play protocols and 51% did not encourage rest by reducing screen time. Another study demonstrated that both physicians and nonphysicians frequently failed to provide appropriate return-to-play recommendations.

Limitations included a low response rate of approximately 5%. In addition, participants may have been more likely to respond if they considered themselves to be knowledgeable regarding concussion assessment and management. Therefore caution must be taken with the generalization of these results.

**CONCLUSION**

In conclusion, the results of this study indicate that chiropractic physicians who possess the credentials required by state legislation are more knowledgeable regarding concussion diagnostic and management. Knowledge deficits among those who do not possess these credentials include familiarity with diagnostic tools and implementation of return-to-play protocols. Athletic trainers and other healthcare professionals who refer concussed athletes should be made aware of these differences. In addition, these healthcare professionals should ensure that the chiropractors who might care for their athletes possess the required credentials.