

Apr 20th, 11:00 AM - 2:00 PM

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Chiropractic Physicians’ Knowledge of Pediatric Concussions

Rachel A. Lamb, ATS & Michael S. Weller, M.S., AT, ATC

ABSTRACT

Recent legislation in the state of Ohio now allows chiropractic physicians who possess certain credentials to both diagnose and clear young concussion patients. Unfortunately, little if any existing research examines the knowledge and abilities of chiropractic physicians regarding the management of this condition. However, because improper treatment of head injuries can have negative consequences, it is important that all eligible healthcare providers demonstrate competence in this area. Therefore, the purpose of this study was to provide a general overview of chiropractic physicians’ knowledge regarding the diagnosis and management of pediatric concussions. A survey was emailed to 1,344 chiropractors in the state of Ohio. Of those who were contacted, 71 completed the survey. The survey included questions regarding demographics, patient scenarios, and concussion management. The results of the study indicated that chiropractors who 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 clear young athletes who have sustained concussions. ^(Ohio General Assembly, 2014) 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. ^(Ohio State Medical Association, 2015) As chiropractic physicians become more involved in caring for young athletes, their knowledge must be assessed to ensure that they can competently manage concussions. Numerous studies have included pediatricians, emergency room physicians, and primary care physicians. ^(Zemek, Eady, Dematteo, et al, 2014) However, with the exception of several small literature reviews and case studies, little to no existing research evaluates chiropractors and their knowledge of concussion assessment and management practices. ^(Johnson, Green, Nelson, & Moreau, 2013; Dalby, 1993)

PURPOSE

The purpose of this study was to provide a general overview of chiropractic physicians’ knowledge regarding the diagnosis and management of pediatric concussions.

METHODS

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 Committee has recommended that chiropractors diagnose and manage concussions in accordance with the 2012 Zurich Consensus Statement on Concussion in Sport. ^(Ohio State Medical Association, 2015) Therefore, all knowledge-based questions were derived from the information presented in this document. ^(McCrooy, McCrewe, McCrea, et al, 2013) The survey consisted of 15 close-ended questions and 2 open-ended responses. Several questions assessed provider demographics including credentials and years of experience. The survey also included three patient scenarios in which concussion was a differential diagnosis. Familiarity with three concussion assessment tools was assessed using a 5-point Likert scale. The final section included questions regarding concussion management practices and the implementation of return-to-play guidelines. In addition, an open-ended response allowed participants to provide the guidelines and resources they used when managing concussions.

A total of 1,344 chiropractors licensed through the Ohio State Chiropractic Board were contacted regarding the study. An e-mail containing a cover letter and a link to the survey was forwarded to each of the potential participants. Of those who were contacted, 71 completed the survey. Before participating in the study, all respondents read and agreed to an informed consent statement approved by the Cedarville University’s Institutional Review Board for the Protection of Human Subjects..

STATISTICAL ANALYSIS

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 for differences between chiropractors who possessed the credentials required by legislation and those who did not. In addition, results were compared according to 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 (78.9%) did not. Over half of the respondents (54.9%) reported 15 or more years of experience while 15.5% reported 5 to 10 years of experience. The majority of participants (84.5%) 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 (36.6%) felt very comfortable managing concussions and 26.8% felt moderately comfortable. Only 9.9% and 8.5% reported feeling slightly uncomfortable and very uncomfortable, respectively. Less than half (45.1%) 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. ^(Question 17) 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. ^(Question 16)

There were several notable differences when results were compared by type of practice. Unsurprisingly, chiropractors who possessed the required credentials cared for concussion 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. ^(Question 12) 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 was borderline significance (p=0.06) regarding progression to the next step of a graduated return-to-play protocol following the provocation of symptoms. ^(Question 17)

The open-ended questions included responses regarding credentials and preferred guidelines. Although several participants did not possess the credentials required by state legislation, they reported additional educational experiences and certifications that may have contributed to their knowledge including degrees in a field related to sports medicine, coaching certification through Heads Up Football, completion of related continuing education courses, and 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 three mentions each. The American Chiropractic Board of Sports Physicians guidelines and the Cantu guidelines were both mentioned twice. Finally, the Colorado guidelines received one mentioned.

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 participants 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 progressing an athlete 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 implantation 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 utilization of guidelines but the rate dropped to 35.2% when all respondents were included. A similar study evaluating pediatricians found that 84% of those surveyed reported the use published guidelines. ^(Kimman, Mannix, Connock, Mehan, 2013) Because the new state legislation has been in effect for a relatively short period of time, chiropractors may not have needed to use guidelines during their clinical practice. However, this gap will need to be addressed, particularly if state legislation expands to include all chiropractic credentials. Although respondents showed some deficits 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 31% did not encourage cognitive rest by reducing screen time. ^(Zemek, Eady, Dematteo, et al, 2014) Another study demonstrated that both physicians and non-physicians frequently failed to provide appropriate return-to-learn recommendations. ^(Arbogast, McGintley, Master, Grady, Robinson, Zonfrillo, 2013) However, it is important that all healthcare professionals utilize appropriate return-to-activity protocols when caring for young athletes.

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 diagnosis 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

Question 3: How frequently do you manage concussions?				
>1 per week 2 (2.8%)	1-3 per month 22 (31%)	<12 per year 30 (42.3%)	Never 16 (22.5%)	
Question 12: Do you, or have you ever, referred to clinical practice guidelines and/or similar resources such as the 2012 Zurich consensus statement when managing concussions?				
Yes 25 (35.2%)			No 46 (64.8%)	
Question 16: Same-day return-to-play should never be permitted regardless of age, severity, or activity levels.				
Strongly Agree 61 (85.9%)	Somewhat Agree 2 (2.8%)	Neutral/Unsure 2 (2.8%)	Somewhat Disagree 6 (8.5%)	Strongly Disagree 0 (0%)
Question 17: During the implementation of a graduated return-to-play protocol, an athlete who experiences symptoms after the completion of a step may progress to the next step if symptoms resolve within 24 hours.				
Strongly Agree 8 (11.3%)	Somewhat Agree 8 (11.3%)	Neutral/Unsure 13 (18.3%)	Somewhat Disagree 10 (14.1%)	Strongly Disagree 32 (45.1%)