



# The Value of Educating Teachers, Coaches, and Athletic Trainers on the Management of Dental Trauma—A Pilot Study.

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## Introduction

- **80%** of patients who present to the E.D. with dental trauma are below the age of 18. Approximately **32%** of those injuries occurred during sports activities.<sup>1, 2</sup>
- 40.2% of pediatric sports-related dental injuries involved baseball, followed by basketball (20.2%), American football (12.5%), and softball (7.6%).<sup>3</sup> Although baseball and basketball account for the highest incidence of sports-related dental injuries, the National Federation of State High School Association solely mandates the use of mouthguards in the following sports: football, field hockey, ice hockey, lacrosse, and wrestling (for wrestlers wearing braces).<sup>3,4</sup>
- Although mouthguards have prevented 22,000 injuries annually, there still appears to be a stigma against their use. A study conducted in Arizona found that one-third of coaches would not encourage mouthguard use, even if there was no cost for mouthguards for their athletes. Researchers concluded that enhancing training and education of coaches on dental trauma would likely increase support for the use of mouthguards.<sup>5</sup>
- A survey of 598 participants found a general lack of knowledge on the management of dental trauma.<sup>6</sup> A systematic review and meta-analysis by Tewari et. al. concluded a globally low level of knowledge among athletes and coaches regarding emergency management of traumatic dental injuries.<sup>7</sup>
- The aim of this study is to investigate the baseline knowledge and assess the benefit of educating teachers, coaches, and athletic trainers about the management of sports-related dental injuries.

## Methods

### Recruitment:

- Active health and resource teachers involved in sports activities, coaches, and athletic trainers working with a population under 18 years old across the City of Richmond and surrounding Richmond counties, in both public and private sports facilities, were recruited via email.
- Emails were collected through school district's public email lists
- This study was promoted by the Department of Assessment, Research, and Evaluation in Henrico Public Schools for the incentive of 1 professional development point for the staff that participated.

### Data Collection:

- Through REDCap, participants were instructed to complete their pre-seminar questionnaire, then listen to a pre-recorded seminar, and finally complete a post-seminar questionnaire.

### Pre-seminar Survey:

- Participants was asked to report whether they predominantly coach/train in a private or public institution and the type of neighborhood (i.e., inner city, suburban, or rural).
- Participants reported if they have witnessed sports-related dental injuries and if so, was asked to describe the type of injury.
- The questionnaire also contained knowledge-based questions to assess the participants' readiness to manage sports-related dental traumas during sports activities.

- The questions addressed fundamental concepts such as the differences between the management of avulsions of primary teeth vs. permanent teeth, situations that require immediate evaluation/treatment, and differentiating expected prognosis based of the severity of an injury.

### Seminar

- The seminar was pre-recorded and posted through the same REDCap link. It was about 23 min long. Several concepts were reviewed including the management of avulsions, indications for referring an athlete for emergency care, and how to direct families to the appropriate provider depending on their injury. The seminar also emphasized the importance of mouthguard use. The success of dental trauma prevention and the sports at highest risk of injury were discussed.

### Post-seminar Survey:

- The post-seminar questionnaire contained similar questions as the pre-seminar survey to test whether there was a difference in their responses before and after watching the pre-recorded seminar.

### Statistical Methods:

- Both surveys were completed using REDCap, a secure web-based survey application.
- Baseline knowledge and preparedness was determined using descriptive statistics including counts and percentages and medians.
- The Wilcoxon signed-rank test was used to analyze the change in number of correct responses before and after the seminar. SAS EG v.8.2 (SAS Institute, Cary, NC) was used for all analyses.

## Results

	n	%
<b>Role</b>		
Youth Sports Coach	3	43%
Athletic Trainer	0	0%
Physical Education Teacher	3	43%
Classroom/Grade Level Teacher	0	0%
Other Resource Teacher (art, music, etc)	1	14%
<b>Sector</b>		
Public	5	71%
Private	2	29%
<b>Neighborhood</b>		
Inner City	2	29%
Suburban	4	57%
Rural	1	14%

- 8 individuals submitted the survey, but 1 respondent did not answer any of the pre-seminar knowledge questions or the demographics.
- 3 respondents reported having witnessed a dental injury while teaching or coaching (**43%**) and most reported multiple instances. 2 of the 3 indicated they were the acting coach, trainer, or teacher when the incident occurred
- 1 respondent did not agree with the statement that they would advocate for the use of mouthguards if their sport does not require them. This individual self-reported their role as a youth sports coach in the private sector but did not indicate the sport.
- All 8 respondents agreed when asked if they believe coaches and trainers should have better education on how to prevent and deal with dental injuries,
- 5 of the 7 participants who completed both the pre- and the post-seminar questions saw an increase in the number of correct responses, the change in the number of correct responses was not statistically significant (p=.3438).

## Discussion

- Greater participation in suburban (57%) and public (71%) sector may point to the success of contacting the school board directly as a method of intervening in community athletics, as many of this demographic exemplifies Henrico County Public Schools.
- Participants in our study demonstrated a generally high baseline knowledge assessed by the pre-seminar questionnaire. Given the overall poor recruitment of participants, this may imply that participants were more likely to be staff that were involved in dental traumas (43%) and were seeking better education based off of their experience, pointing to the value of educating staff on interventions prior to the trauma occurring.
- All participants stated they believed they needed more education on preparedness for management of sports-related dental traumas
- Future studies should amplify recruitment across a larger geographical area to analyze responses in several areas of Virginia. This would increase the sample size and gather more information from different demographic groups.
- Improved participation will allow more statistical analysis between different groups to assess which group is more readily prepared for sports-related injuries.
- Future studies should consider administering different types of educational sessions (via Zoom, in-person, or pre-recorded) to assess which approach improves responses best. Improving an educational instrument to inform the community may improve outcomes of sports-related dental injuries.

## Conclusion

This study demonstrated a high baseline knowledge of youth sports supervisors regarding dental trauma and prevention, notably biased by nearly half of participants having treated a dental trauma prior to the study. Also, all participants believe that there should be improved training in their fields on sports-related dental injuries. Improved responses in the post-seminar survey lacked statistical significance, likely due to the limited sample size. This study serves as an example of an intervention within the community, targeting those who often triage dental traumas in the field, in order to improve the general understanding and management of traumatic dental injuries,. Improved management in the field could translate to better outcomes once the dental provider is involved.

## References

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