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The value of educating teachers, coaches, and athletic trainers on the management of dental trauma.

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Abstract

THE VALUE OF EDUCATING TEACHERS, COACHES, AND ATHLETIC TRAINERS ON THE MANAGEMENT OF DENTAL TRAUMA- A PILOT STUDY.
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Purpose: 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: Teachers, coaches, and athletic trainers working in youth sports activities across the city of Richmond and the Greater Richmond Region were recruited via email. Participants answered a pre-seminar survey to evaluate their baseline knowledge and determine whether they experienced dental trauma with their athletes previously. The survey also indicated whether they participated in a public or private sports facility. The participants watched a pre-recorded virtual seminar educating them on the basic management of traumatic dental injuries and how to guide affected athletes and their families to obtain optimal care. A post-seminar survey asked the same knowledge-based questions as the pre-seminar survey to analyze their improvement and whether education guided by pediatric dentistry would be beneficial for coaches and athletic trainers. Responses were summarized with descriptive statistics including counts and percentages and medians. The change in number of correct responses before and after the seminar was assessed with the Wilcoxon signed-rank test. SAS EG v.8.2 (SAS Institute, Cary, NC) was used for all analyses. Significance level was set at 0.05

Results: A total of 8 individuals submitted the survey. Three of the respondents identified as youth sports coaches, three identified as physical education teachers, and one as another resource teacher (art, music, etc). The majority worked in a public facility (n=5, 71%) while the others were in the private sector (n=2, 29%). Four of the respondents indicated they work in a suburban neighborhood setting (57%), 2 in inner city (29%), and 1 in rural (14%). Three respondents reported having witnessed a dental injury while teaching or coaching (43%) and most reported multiple instances. Only one respondent indicated that their athletes are required to wear a mouthguard (33%). Two of the three indicated their sports facility or team has the resources to obtain mouthguards (67%). All 8 respondents were asked if they believe they should advocate for the use of mouth guards to prevent traumatic dental injuries. One respondent did not agree with the statement that they would advocate for the use of mouthguards if their sport does not require them. When asked if they believe coaches and trainers should have better education on how to prevent and deal with dental injuries, all 8 respondents agreed.

Five of the seven 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).

Conclusions:

This study demonstrated a high baseline knowledge of youth sports supervisors in regard to dental trauma and prevention, which was limited by nearly half of participants having treated a dental trauma prior to the study. Improved responses in the post-seminar survey lacked statistical significance and were limited by sample size. All participants believe that there should be improved training in their fields on sports-related dental injuries. Further studies are needed to assess the potential impact of improving knowledge of sports-related dental traumas with education interventions for participants.

Introduction

Traumatic dental injuries are highly prevalent during childhood and among adolescents. A systematic review and meta-analysis by Azami-Aghdash et. al. found the prevalence of dental trauma in childhood and adolescence to be 17.5%. This study found a higher prevalence of traumatic dental injuries in America compared to Asia or Europe, which could be due to the increased popularity of sports activities during childhood in America.[1]According to the American Academy of Pediatric Dentistry (AAPD) Council on Clinical Affairs, 80% of patients who present to the emergency department with dental trauma are below the age of 18. Approximately 32% of those injuries occurred during sports activities.[2]

A cross-sectional study identified an increase in prevalence of traumatic dental injuries in school-aged children ranging from 8-12 years old, with increasing age correlating with an increase in prevalence. The distinct increase in the prevalence of dental trauma with age from 8 to 12 years old emphasizes the need to establish preventive strategies among schoolchildren at a young age. The authors noted the importance of making strides to prevent and better manage dental injuries in school settings.[3] Improved training for people who supervise school-aged children with high-risk activity such as sports could improve the management of traumatic dental injuries.

Falls are the most common etiology of dental trauma; however, contact sports are a close second.[4] Amongst sports, a study identified that baseball had the highest prevalence of trauma in the 7–12-year-old age group. They also noted that basketball had the highest occurrence of dental trauma in the 13–17-year-old age group. Overall, 40.2% of pediatric sports-related dental

injuries involved baseball, followed by basketball (20.2%), American football (12.5%), and softball (7.6%).[4] Although baseball and basketball account for the highest incidence of sports-related dental injuries, the National Federation of State High School Association currently solely mandates the use of mouthguards in the following sports: football, field hockey, ice hockey, lacrosse, and wrestling (for wrestlers wearing braces).[5] There is a clear opportunity to prevent dental injuries in baseball and basketball through implementation of policies requiring mouthguards.

Attitudes towards mouthguards in the sports community may hinder athletes' compliance. 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.[6] As awareness regarding the frequency and severity of dental injuries among child athletes is increasing, sports supervisors and parents should advocate for the use of mouthguards in those sports which pose the greatest risk.[3]

The International Association of Dental Traumatology released guidelines based on the current evidence-based practices in managing dental trauma. These guidelines are endorsed by the AAPD and are the foundation for the current recommendations for emergency care of traumatic dental injuries. According to these guidelines, various factors influence the management of sports-related dental injuries. Some of these factors include, but are not limited to, the type of injury, whether the affected tooth/teeth are primary or permanent, the patient's level of cooperation and ability to tolerate dental procedures, and access to dental providers to definitively treat the injury. Without dental providers on site, coaches, athletic trainers, and

teachers serve as first responders during the critical period immediately following injury, whose actions influence how the dental provider will eventually manage the patient.

To understand how first responders' level of education and decision-making impacts treatment planning and outcomes for pediatric dental traumas, it is important to understand standard practices for treating these injuries. Management of tooth fractures depends on the severity of the fracture and the involved tissues. It is recommended to contour or restore enamel fractures to prevent soft tissue injuries from the irregular tooth surface. Tooth fractures involving dentin should be restored, when possible, with a provisional restoration covering the exposed dentin until the patient can obtain a definitive restoration. Pulp therapy (pulp capping, pulpotomy, or root canal therapy) is necessary for fractures involving the pulp. Treatment for root fractures depends on the coronal fragment's mobility and may involve stabilizing the loose fragment to adjacent teeth using a passive and flexible splint. If the injury involves a primary tooth, depending on the patient's compliance, it may be preferable to observe a fragment that is not displaced, or extract an excessively mobile fragment, instead of stabilizing with a splint. [7,8]

It is essential for providers and athletic supervisors to be well-versed on all evidence-based treatment recommendations following sports-related dental injuries. Luxation injuries are usually painful injuries that require urgent attention from a dentist. In addition to recommending immediate medical attention, first responders should be aware that luxation injuries with mobility may pose an aspiration risk for the patient. Lateral and extrusive luxations often require repositioning the tooth and/or alveolar fragment and splinting the tooth to adjacent teeth with a wire that is bonded to the surfaces of the teeth. These injuries require multiple follow-up appointments; athletes and coaches must understand that the risk of missing follow up may worsen the prognosis of the tooth.[7, 8]

Dental trauma guidelines for intrusive luxations of primary teeth have recently been updated. Previous guidelines advised immediate extraction of the traumatized primary tooth if the direction of displacement of the root is toward the developing permanent tooth. The updated Dental Traumatology Guidelines found that there is limited evidence for immediate action, due to evidence of spontaneous re-eruption for intruded primary teeth, the concern that additional trauma may be inflicted on the tooth germ during extraction, and the lack of evidence that immediate extraction will minimize further damage to the developing permanent tooth.[9] A study evaluated different aspects of intrusive injuries in primary teeth, including extent or severity of injuries, treatment provided, and complications to the primary and permanent dentition. This study supported the recommendation to allow for re-eruption of the primary tooth, even in total crown intrusion.[10] These new guidelines suggest that coaches, trainers, and teachers involved in sports activities, if able to differentiate between types of luxations, would not need to recommend emergent medical care for intrusive luxations. Additionally, education on common complications that only require follow-up with dentistry, such as benign color changes, will avoid unnecessary emergency medical care.

The avulsion of a permanent tooth is considered one of the few true dental emergencies. Actions and timing of actions taken after the injury are crucial to the prognosis and outcome. According to the guidelines presented by the IADT, replantation is usually the best treatment; however, most circumstances do not allow for immediate replantation. When immediate replantation is not possible, it is critical to place the tooth in an appropriate storage medium to avoid desiccating the tooth. The following storage media is recommended for avulsed teeth in descending order of preference: milk, HBSS, saliva, or saline.[11] To increase the likelihood of preserving the vitality of PDL cells, the total dry time should be less than 60 minutes. After

gently rinsing the tooth with milk, saline, or the patient's saliva and placing it back into the socket, the tooth must be splinted to adjacent teeth with a flexible wire.

A study conducted in Croatia assessed the knowledge of water polo coaches about dental emergencies. Although 90.2% of the coaches were experienced in the management of a sports-related dental injury, there was a significant lack of awareness of the correct protocol for the management of a tooth avulsion. 68.6% of coaches indicated that they would store an avulsed tooth in a handkerchief or gauze and 7.8% would rinse the tooth in water and wrap it in gauze afterward. None of their respondents would choose milk as a storage medium.[12] Choosing suboptimal storage mediums increases the risk of ankylosis and resorption of the root with delayed replantation.[11] This highlights the need to improve awareness of the management of dental emergencies and set a proper protocol to best treat athletes.

Avulsion injuries to permanent dentition often pose questionable prognosis and consequent highest treatment burden.[13,14] Actions taken immediately after an avulsion are correlated with the prognosis of the tooth. By taking timely action, coaches, athletic trainers, and teachers can improve prognosis of the tooth, as they are likely the first available help to the athlete. Ideally, supervisors should place the tooth into the socket immediately to improve the overall prognosis of the tooth. In situations where that is not possible, supervisors should have appropriate storage media and have a protocol in place to guide the child and their family to obtain proper care.

The prognosis after dental trauma greatly depends on the timing of appropriate management. Even as advancements have been made to optimize treatment, a substantial proportion of emergencies are seen in which care is delayed, inappropriate, or of suboptimal quality.[15] According to a review, only one third of affected patients presented to a dentist within

24 hours of the incident; however, the remaining two thirds waited up to one year to seek treatment.[16] Another study reported that the most common dental injury in permanent dentition was uncomplicated tooth fractures; however, the most common treatment was root canal therapy followed by composite resin restorations.[17] This could be due to the fact that most patients delayed seeking dental treatment leading to worsening symptoms resulting in necessitating root canal therapy.

A study conducted by Cortes et. al. evaluated the socio-dental impacts of untreated anterior permanent tooth fractures. The authors concluded that children with untreated fractures to their permanent anterior teeth reported an impact on their quality of life due to their untreated injury. These children were impacted in daily activities including "'eating and enjoying food', 'cleaning teeth', 'smiling, laughing, and showing teeth without embarrassment', 'maintain usual emotional state without being irritable' and 'enjoying contract with people."[18] This study highlights the psychosocial implications that can occur during the development of a child from poorly managed dental trauma. Moreover, the esthetic result of definitive care should not be ignored in efforts to avoid potential psychosocial effects on the developing child.[15]

According to a review by Anderrson et al, key individuals close to the injured child such as parents, teachers, school nurses, health care professionals, and coaches ideally should know how to manage avulsed permanent teeth at the scene of an accident. Yet most studies have reported a low level of knowledge on managing dental trauma. The lack of adequate knowledge regarding dental injuries among lay people is likely due to the fact that acute dental trauma care generally is not included in their education or in emergency care resources.[19] Pediatric dentists should be aware of the level of understanding on this matter in their community and intervene whenever possible to educate and help manage athletes who experience sports-related injuries.

The public should be better informed on dental injuries to advocate for childhood and adolescent athletes. Athletes and athletes' families should be aware that certain injuries require several appointments for follow-up or multiple stages of treatment. This highlights consequences in regards to cost and time for the athletes and their families.[16] Important public health implications such as how to best organize emergency dental care and how to prevent dental injuries, decrease cost, and increase knowledge are important factors needed to change epidemiologic data toward more favorable management strategies in the future.[19]

Athletes and their families should be informed about possible sequelae following traumatic dental injuries. In general, sports-related injuries may require multiple follow-up visits. A comprehensive review by Flores and Onetto in 2019 assessed the severity of injuries to the developing dentition. The findings from this review support close monitoring and early diagnosis after severe oral trauma in young children. After severe disturbances, the developing dentition may acquire crown dilaceration, odontoma-like malformation, arrest of root formation, sequestration of permanent tooth germs, and eruption disturbances[20]. These possible consequences may require a multi-disciplinary approach to manage the dentition of the developing child. It is imperative to continue educating families on prevention of dental injuries even after an incident. Children with a history of dental trauma have a high likelihood of future dental injuries and re-injuring the same tooth. [15] Education and anticipatory guidance on dental trauma prevention should be reinforced after an injury by their dental home, sports team supervisors, and teachers involved in sports activities.

Given the impact that coaches, trainers, and teachers can have on outcomes for pediatric dental traumas, as well as the unknown level of education and implementation, there is ample opportunity to assess, educate, and reinforce knowledge of sports-related injuries in the

community. There are a limited number of studies that assess the preparedness and knowledge of supervisors in the frontline of youth sports, who may commonly witness sports-related dental injuries. Advocating mouthguard usage and educating the supervisors witnessing sports-related dental injuries could prevent dental trauma and alleviate the emotional and financial burden of poorly managed injuries. 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

This study was approved by the Virginia Commonwealth University Institutional Review board HM20021169_Ame2. This cross-sectional survey examined responses from teachers, 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. Participants were recruited via email and they were collected through the school district's public email lists. The data was used to determine the preparedness of teachers, coaches, and athletic trainers with traumatic dental injuries during sports practices and events both before and after. The training was conducted through a pre-recorded, virtual training seminar.

The seminar highlighted the important, fundamental guidelines for management of dental trauma to improve the guidance for affected athletes. Participants were 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 also reported if they have witnessed sports-related dental injuries and if so, were asked to describe the type of injury. Those questions assessed the participants' personal experience with dental trauma to exhibit the prevalence of sports-related dental trauma in the participants' respective sports. 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 on the severity of an injury. 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. This survey study assessed the baseline knowledge as well as acquired knowledge of teachers, coaches, and athletic trainers on common sports-related dental injuries.

Teachers, coaches, and athletic trainers working with youth sports were recruited by contacting public and private schools and sports facilities. Henrico County Public Schools agreed to use this study as an opportunity for professional development for their staff. Participants who completed the pre-seminar questionnaire, the pre-recorded seminar, and the post-seminar questionnaire were deemed eligible for one hour of professional development. Data was collected through the responses of the pre-seminar and post-seminar surveys. 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 was assessed with. SAS EG v.8.2 (SAS Institute, Cary, NC) was used for all analyses.

Results

Responses were summarized with descriptive statistics including counts and percentages and medians. The change in number of correct responses before and after the seminar was assessed with the Wilcoxon signed-rank test. SAS EG v.8.2 (SAS Institute, Cary, NC) was used for all analyses. Significance level was set at 0.05.

A total of 8 individuals submitted the survey, but one respondent did not answer any of the pre-seminar knowledge questions or the demographics**.** Three of the respondents identified as youth sports coaches, three identified as physical education teachers, and one as another resource teacher (art, music, etc). The majority worked in a public facility (n=5, 71%) while the others were in the private sector (n=2, 29%). Four of the respondents indicated they work in a suburban neighborhood setting (57%), 2 in inner city (29%), and 1 in rural (14%). See Table 1.

Three respondents reported having witnessed a dental injury while teaching or coaching (43%) and most reported multiple instances. The types of injury reported included: “teeth being knocked out with a softball (root and crown)”, “two students having their front two teeth lost”, “broken teeth”, and “teeth through the lips and cheeks”. Two of the three indicated they were the acting coach, trainer, or teacher when the incident occurred.

The three youth sports coaches were also asked questions about mouthguards during their sports. Only one respondent indicated that their athletes are required to wear a mouthguard (33%). Two of the three indicated their sports facility or team has the resources to obtain mouthguards (67%). All 8 respondents were asked if they believe they should advocate for the

use of mouth guards to prevent traumatic dental injuries. One 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. When asked if they believe coaches and trainers should have better education on how to prevent and deal with dental injuries, all 8 respondents agreed.

For the seven individuals who completed the pre- and post-seminar questionnaires, the median number of correct responses before the seminar was 4 out of the possible 6 and 5 out of 6 after the seminar. Five of the seven participants who completed both the pre- and the post-seminar questions saw an increase in the number of correct responses. One participant remained consistent with the number of correct (4 out of 6) and one participant had a decreasing score on the post survey (pre: 5 correct, post: 1 correct). The change in the number of correct responses was not statistically significant ($p=.3438$). A summary of the responses is presented in Table 2.

Discussion

This study reasserted many issues with dental traumas and the knowledge of athletic supervisors in the management of dental injuries. When looking at participant demographics, there is greater participation in suburban (57%) than inner city (29%) staff, as well as greater participation in public (71%) versus private (29%) sector coaches, trainers, and teachers. This may point to the success of contacting the school board directly as a method of intervening in community athletics, as many of this demographic were employees of Henrico County Public Schools. Additionally, no athletic trainers participated, though they are likely the first line of intervention for dental traumas in sports.

The surprising part of this study's results was that staff demonstrated a generally high baseline knowledge assessed by the pre-seminar questionnaire. This finding is contrasted by a study conducted in Saudi Arabia, which surveyed the general public on their knowledge of dental trauma. After assessing the surveys of 598 participants, they found a general lack of knowledge on this matter.[21] A systematic review and meta-analysis by Tewari et. a. concluded a globally low level of knowledge among athletes and coaches regarding emergency management of traumatic dental injuries.[22] Looking at the demographics of our study participants, three of seven respondents (43%) stated they had witnessed a dental trauma, a much higher portion of training staff population when compared to the prevalence of sports-related dental traumas in the general pediatric population (31.8%)[23]. While this may point to sufficient training by the school systems in preparing their staff for dental traumas, other components of the questionnaire may offer a different view. Given the overall poor recruitment of participants, this may imply that

participants were more likely to be staff that were involved in dental traumas and were seeking better education based off of their experience, pointing to the value of educating staff on interventions prior to the trauma occurring. This concept is supported by all participants stating they believed they needed more education in preparedness for dental traumas. A similar result was noted in a study conducted in Kolkata, India, which assessed responses from school teachers on their knowledge on dental traumas. Of their participants, 59% felt dissatisfied with their knowledge regarding emergency management of dental injuries and 60.68% were willing to obtain more training to improve their understanding.[24]

According to the AAPD, it is the responsibility of the dental professional to encourage and inform the public on the benefit of the use of mouthguards.[25] Only one of the participants indicated that their athletes are required to wear mouthguards. This sheds light on the lack of popularity of mouthguards in youth sports activities. A study assessed the perception of dental injuries in coaches and athletes and found that the majority of participants were aware of the positive impact of mouthguards in injury prevention, but most did not use mouthguards due to lack of support from coaches.[26] In the post-seminar survey of the present study, seven out of the eight participants agreed with the statement that they would advocate for the use of mouthguards if their sport does not require them. Again, this finding may be due to the fact that 43% participants indicated that they were the acting supervisor in a dental injury, likely leading them to have a better understanding of the impact mouthguards have in injury prevention.

In addition, there is a lack of historical data in the literature on educational interventions of dental traumas for supervisors in the field. Topics that yielded no statistically significant data in this study include demographics of who is actually intervening (coaches, trainers, teachers), baseline level of knowledge of those who are intervening, general number of dental traumas that

coaches and trainers see in their jobs, and if any interventions like dental trauma continuing education are given, or helpful, in school systems. The intent of this project was to answer many of these questions, but with limited participation, they may continue to be unanswered. Perhaps this barrier to data collection has also plagued other attempts at studying these topics, given that there are so few studies regarding dental traumas and primary interventions by athletic personnel. Though the improvement in knowledge for participants was not statically significant, this was severely limited by sample size, thus making further research in this field very valuable. Approaching the school systems to offer continuing education demonstrated improved, though still limited, participation, and may be the preferred approach for future research. Additionally, in-person conferences during staff meetings could yield far greater participation, in real-time, with question-and-answer sessions providing more insight into further directions and goals of these interventions. This study can be used as a pilot for an expanded recruitment throughout the state to further assess demographics as well as improve participation.

It is possible that the impact that the COVID-19 pandemic has had on the education system and staff affected their willingness and/or ability to participate in additional educational programs such as this study, outside of their strenuous daily expectations. Additionally, several school districts restricted their involvement in research due to the weight of the pandemic on the education system. Several of those school districts do not share staff emails publicly, so we could not give their staff the opportunity to participate.

One of the major limitations of this study is limited sample size and poor recruitment of participants. While a direct approach was taken to contacting participants through email very frequently and over a period of several months, enrollment was very low. The next approach was to contact division leadership and the school systems themselves to offer this training as

continuing education. While only Henrico County approved this, it had largely no effect in increasing enrollment. Originally, the study plan was to give in person lectures with a pre and post lecture questionnaire; the ongoing pandemic forced the study plan to become virtual, originally with only one participant attending a live virtual seminar. Switching to a recorded seminar improved enrollment to seven participants, but continued efforts with reminders and emails did not improve numbers. Future studies with a larger sample size are necessary to assess the knowledge and the effect of additional training for coaches, athletic trainers, and teachers that could eventually improve the management of sports-related dental injuries.

Conclusion

Based on the current literature, the baseline knowledge of lay people about emergency management of traumatic dental injuries is generally low, while the prevalence of sports-related dental injuries remains high. This data suggests an opportunity to improve management of sports-related dental injuries in the field with an educational approach could improve outcome; our study aimed to both assess the baseline knowledge of sports-related dental traumas of first responders, as well as our ability as dental providers to educate this population. Our 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. Improved responses in the post-seminar survey lacked statistical significance, likely due to the limited sample size. Although participants demonstrated a high level of understanding on this matter, all participants believe that there should be improved training in their fields on sports-related dental injuries. 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, where improved management in the field could translate to better outcomes once the dental provider is involved. Future studies should aim to improve the diversity of participants across a larger geographical area, recruit a larger number of participants to improve the chance of finding a statistically significant improvement in post-seminar responses, and consider administering different types of educational sessions to assess which approach works best.

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Tables

Table 1: Respondent Demographics

	n	%
Role		
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%
Sector		
Public	5	71%
Private	2	29%
Neighborhood		
Inner City	2	29%
Suburban	4	57%
Rural	1	14%

*Note: One participant did not answer these questions

Table 2: Percent Responding Correctly to Knowledge Questions Before and After Seminar

Question	Pre-Seminar	Post-Seminar
The most common dental injury is a tooth fracture. (T/F)	6, 86%	5, 71%
I can say with confidence that I know the difference between a baby front tooth and a permanent front tooth. (T/F)	4, 57%	6, 86%
If one of my athletes loses an adult front tooth on the court/field, I would	4, 57%	6, 86%
If one of my athletes loses a baby front tooth on the court/field, I would	4, 57%	3, 43%
If one of my athletes' teeth doesn't get knocked out, but it is not in line with the other teeth, I would	5, 71%	6, 86%
Which injury has a worse prognosis?	3, 43%	3, 43%
Total Correct (Median, Range) P=0.3438	4, 2-5	5, 1-5

Appendix

Management of Dental Trauma

This study will assess the baseline knowledge of health and physical education teachers, coaches, and athletic trainers from public and private sports facilities on the management of dental trauma through a survey to measure their preparedness if a trauma were to occur under their watch.

The intervention of this study involves a prerecorded 23-minute virtual seminar for participating health and physical education teachers, coaches, and athletic trainers at your own convenience. The seminar will cover basic information about common dental traumas occurring during athletic events, such as luxations, fractures, subluxations, avulsions, intrusions, and extrusions and how to guide athletes and athletes' families to obtain the best management of care. Much of the seminar may reinforce concepts already addressed in the training of the potential participants. The outcome of the seminar will be assessed through a post-seminar quiz. The result of this study may improve the response times and result of management of dental traumas, leading to better prognoses for teeth affected by dental traumas.

The survey contains an initial questionnaire, the pre-recorded seminar, and the post-seminar questionnaire. The overall time commitment for this study is no more than 30 minutes, including the 23-minute seminar. If you have any questions about the study, feel free to email me. My personal email is mottal@vcu.edu.

*If you are a Henrico Public Schools employee, you are eligible for one hour of professional development after participating in this study. The last page of the survey will provide the opportunity for you to submit your email for professional development credit.

Pre-Seminar Questions

I am a:
(Select all that apply)
(Select all that apply)

☐ Youth Sports Coach
☐ Athletic Trainer
☐ Physical Education Teacher
☐ Classroom/Grade level Teacher
☐ Other resource teacher (art, music, etc)

Do you teach/coach/train predominately in a private or public facility?

◯ Private
◯ Public

How do you classify the neighborhood where your school or sports facility is?

◯ Inner city
◯ Suburban
◯ Rural

Have you witnessed a dental injury while teaching or coaching?

◯ Yes
◯ No

How would you describe the dental injury or injuries?

Were you the acting teacher/coach/trainer during the incident?

◯ Yes
◯ No

Is it mandatory for your athletes to wear a mouth guard?

◯ Yes
◯ No

My sport facility/team has the resources to obtain mouth guards.

◯ Yes
◯ No

The most common dental injury is a tooth fracture.

◯ True
◯ False

I can say with confidence that I know the difference between a baby front tooth and a permanent front tooth

◯ True
◯ False

If one of my athletes loses an adult front tooth on the court/field, I would...

◯ Put the tooth back in and send them to the emergency department.
◯ Put the tooth in a dry place and tell them to see the dentist the next day.
◯ Put the tooth in water and send the athlete to the emergency department.

If one of my athletes loses a baby front tooth on the court/field, I would...

◯ Put the tooth back in and send them to the emergency department.
◯ Put the tooth in a dry place and tell them to see the dentist the next day.
◯ Put the tooth in water and send the athlete to the emergency department.

If one of my athletes' teeth doesn't get knocked out, but it is not in line with the other teeth, I would...

◯ Tell them to finish the game/practice.
◯ Tell them to sit out this game/practice and make an appointment with a dentist whenever possible.
◯ Tell them to make an appointment with their dentist urgently. If the dentist is not available, tell them to go to the emergency department.

Which injury has a worse prognosis?

◯ Concussed tooth
◯ Intruded tooth
◯ Luxated/rotated tooth

Seminar Video

Please view the recorded seminar on Managing Dental Trauma

After viewing the seminar video, press "Next Page" to continue.

Post-Seminar Questions

The most common dental injury is a tooth fracture.

◯ True
◯ False

I can say with confidence that I know the difference between a baby front tooth and a permanent front tooth

◯ True
◯ False

If one of my athletes loses an adult front tooth on the court/field, I would...

◯ Put the tooth back in and send them to the emergency department.
◯ Put the tooth in a dry place and tell them to see the dentist the next day.
◯ Put the tooth in water and send the athlete to the emergency department.

If I am not comfortable placing a tooth back into the socket, I would put the tooth in:

◯ Milk
◯ Hanks Balanced Salt Solution
◯ The athlete's saliva
◯ Any of the above

If one of my athletes loses a baby front tooth on the court/field, I would...

◯ Put the tooth back in and send them to the emergency department.
◯ Put the tooth in a dry place and tell them to see the dentist the next day.
◯ Put the tooth in water and send the athlete to the emergency department.

If one of my athletes' teeth doesn't get knocked out, but it is not in line with the other teeth, I would...

◯ Tell them to finish the game/practice.
◯ Tell them to sit out this game/practice and make an appointment with a dentist whenever possible.
◯ Tell them to make an appointment with their dentist urgently. If the dentist is not available, tell them to go to the emergency department.

Which injury has a worse prognosis?

◯ Concussed tooth
◯ Intruded tooth
◯ Luxated/rotated tooth

I believe that coaches and trainers should have better education on how to prevent and deal with dental injuries.

◯ True
◯ False

If my sport does not require the use of mouth guards, I believe that we should advocate for the use of mouth guards to prevent traumatic dental injuries during sports practices/games.

◯ True
◯ False

If you are employed by Henrico Public Schools and would like to receive 1 hour of professional development credit for your participation, please provide your email address. This information will only be used to provide credit and will be separated from your responses

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