

# Sports Cult in Hyderabad: Role of a Pedodontist in Protecting Winning Smile

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## ABSTRACT

**Aim and objective:** To assess dental trauma, level of knowledge of participants about the preventive measures, and management of traumatic dental injuries during sports in children aged 6–15 years in private sports academies in Hyderabad.

**Materials and methods:** A cross-sectional study was carried out among 317 children aged 6–15 years and 25 coaches by a structured questionnaire to assess the prevalence of dental trauma during sports followed by an awareness program on prevention. Data obtained were analyzed.

**Results:** Twenty-two percent (76) of children reported an incidence of dental injuries. Thirty-five percent (111) of children were aware that reimplantation was possible. Forty-three percent (139) of children knew that mouthguards can prevent orofacial injuries, but none are using them. Seventy-six percent (19) coaches would refer the child to a general physician in cases of reported trauma.

**Conclusion:** In our study, most of the children and coaches lack awareness about sports-related dental injuries, their prevention, and initial management. None of the children were using mouthguards. Pediatric dentists should conduct programs at schools/sports academies to spread knowledge and awareness about sports-related dental injuries. Further studies are required in this aspect with a larger sample size.

**Keywords:** Avulsion, Dental trauma, Prevention, Protective devices, Sports injuries.

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## INTRODUCTION

Vigorous physical activities and competitive athletics offer children health benefits as well as overall development which has led to mushrooming of various sports academies.

With the increased participation of children in sports, there is an increased risk of sustaining trauma to oral soft and hard tissues (injuries to teeth and facial bones such as luxation, crown/root fractures, intrusions, avulsion, and dentofacial fractures) which can be minor or extensive and has an impact on child's psychological status.<sup>1,2</sup> The immediate management of traumatized tooth is important for its long-term survival and this depends on the person who is attending child at the moment of injury.

Dental trauma in sports differs from other forms of dental trauma, as it is easy to prevent and there is also a probability to dramatically reduce their occurrence by the use of mouthguards<sup>3,4</sup> as strongly recommended by the American Dental Association (ADA). They prevent fracture of teeth by: (i) separating maxillary and mandibular teeth, absorbing and redistributing shock during direct forceful impacts (ii) reduce laceration and bruising of soft tissue, thus cushioning and distributing the force of impacts.<sup>5</sup>

Despite the high occurrence of traumatic dental injuries, sports dentistry has been a neglected field. Hence, it has evolved as an independent subspecialty that has expanded much beyond its traditional image of being limited to mouthguard fabrication and treatment of fractured teeth. According to the International Academy of Sports Dentistry (IASD), "Sports dentistry involves prevention and treatment of orofacial athletic injuries and related oral diseases as well as collection and dissemination of information on dental athletic injuries and encouragement of research in the prevention of such injuries".

Pedodontists play a major role in sensitizing children, parents, and coaches about sports-related injuries as well as complications. The knowledge and attitude of sports coaches and children about

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sports-related dental injuries are very important for the pedodontist to provide proper information to them regarding prevention and initial management. So, the present study aimed to assess the knowledge and attitude of children and sports coaches about the preventive measures and management of traumatic dental injuries during sports.

## MATERIALS AND METHODS

This cross-sectional study was conducted in seven private sports academies for a period of one month in Hyderabad, Telangana, India. Ethical clearance for the study was taken from MNR Institute, Sangareddy. Children who played different sports like Football, Cricket, Gymnastics, Karate, Skating, Athletics, Badminton, and Lawn

Tennis were included in the study as study participants. Necessary permissions were obtained from the academy officials in charge before conducting the survey to interact with coaches, children, and parents if they were present.

A study-specific questionnaire was designed. The validity of the questionnaire was assessed, by asking 20 pedodontists to indicate their level of agreement to the question statements using a five-point rating scale (extremely appropriate, appropriate, no idea, inappropriate, and extremely inappropriate). Some of the test questions were modified to improve the clarity of the questions and to validate the items of the questionnaire, the questionnaire was tested. The validity of every question was 75–91%, and the overall validity of the questionnaire was 83% which has been considered well accepted for the study. The Cronbach's alpha<sup>6</sup> was used to determine the reliability of the questionnaire, and the response of 20 pedodontists to the same questionnaire within 2 weeks has been analyzed. Cronbach's coefficient for the reliability of the overall questionnaire was 0.86, which was acceptable for the study.

The anonymity of the study subjects was maintained by not collecting their personal information. They have been allowed to participate voluntarily in the study and given free choice to withdraw from the study at any given point in time.

Questionnaire for participant child contained nine questions (Table 1) regarding the type of sport they had been practicing, injuries incurred, management of avulsed tooth and knowledge regarding mouthguards. The questionnaire for coaches contained 15 questions (Table 2) including their experience in sports training, management of injuries, and their awareness regarding the prevention of dental trauma using mouthguards.

If participants had difficulty understanding any question, an explanation was given to them. The filled questionnaires were collected after 10 minutes followed by an informative lecture in simple language in English as well as Telugu (Mother tongue) on a short introduction to dental tissues, traumatic injuries, emergency measures, management, and the importance of mouthguards. After the lecture, a question and answer session was conducted to encourage the interaction of participant children and coaches.

The collected data were entered into Microsoft Excel sheets and statistically analyzed using SPSS version 22 (IBM corporation, Washington DC, United States). The data were expressed as percentages.

## RESULTS

Out of total participant children, 76% (243) are males and 24% (74) are females. The distribution of participant children is given in Figure 1.

Out of the total participant children, 22% (76) had sustained orofacial injury and 78% (239) had never sustained any form of orofacial injury during sports. The type of injury varied from bruise (3%), soft tissue lacerations (12%), fractured tooth (6%), avulsion of teeth (1%), and fracture of facial bones (<1%) (Fig. 2).

Out of the total participant children, 35% (111) knew that it was possible to reimplant the teeth with the majority of 65% (206) being unaware of reimplantation. Participants with knowledge of reimplantation (35%) as the first-aid step in dental trauma however were unaware of the importance of time while reporting to the dental office (71%). Forty-seven percent (53) responded that they would carry the tooth by wrapping it in a paper/cloth (Figs 3 and 4).

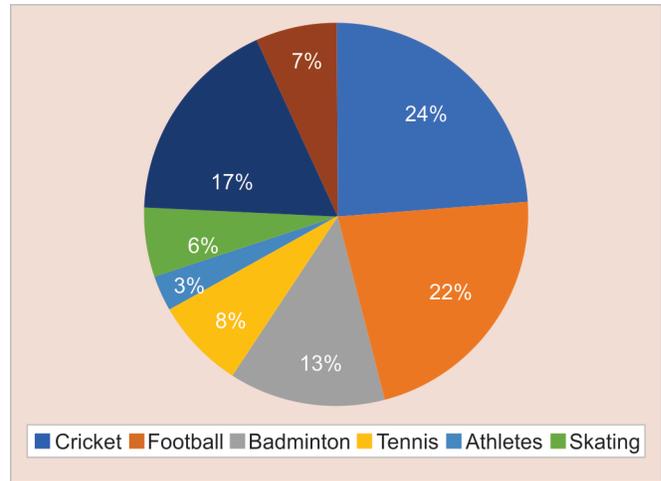
**Table 1:** Questions for participant children

| S. no. | Questions  |
|--------|--|
| 1      | Name the type of sport you participate   |
| 2      | What were the type of injuries you observed/sustained during playing?<br>a. Bruise<br>b. Cut lip, cheek, or tongue<br>c. Broken tooth<br>d. Lost tooth<br>e. Fracture of facial bones<br>If any of the above, mention whether they were observed/sustained<br>If you have sustained dental injuries, answer question.3, if not go to question.4                              |
| 3      | In case of injuries, have you been to dentist?<br>If yes,<br>a. Mention the type of injury and treatment you were given<br>b. How long after the incident did you go to the dentist?<br>i. Immediately, on the day of the accident within 2 hours<br>ii. Immediately, on the day of accident > 2 hours<br>iii. Within a week<br>iv. Within a month<br>v. Longer than a month |
| 4      | Do you know that it is possible to put the teeth back into your mouth (Reimplant)?<br>Yes/No   |
| 5      | In your opinion within which period of time tooth should be reimplanted?<br>a. Up to 30 minutes<br>b. Up to 2 hours<br>c. 6–12 hours<br>d. Don't know  |
| 6      | How would you carry/store the tooth to your dentist?<br>a. Patient's own saliva<br>b. Water<br>c. Milk<br>d. Wrapped in paper/cloth  |
| 7      | Is there any sort of education regarding sports injuries in your academy? Yes/No<br>If yes, how many times you were counseled regarding sports trauma?   |
| 8      | Are you aware that mouthguards can prevent dental injuries? yes/No   |
| 9      | Do you use mouthguards? Yes/No<br>If no, why don't you?<br>i. My coach does not tell me to do so<br>ii. It is expensive<br>iii. It is uncomfortable/difficulty in speech or breathing<br>iv. Never had an injury/it is not important for me  |

Out of total participant children, 139 (44%) were aware that mouthguards can prevent orofacial injuries. None of the participants used mouthguards and the various reasons are summarized in Table 3.

**Table 2:** Questions to coaches

| S. no. | Questions  |
|--------|--|
| 1      | Has any athlete under you suffered from a permanent damage to his/her teeth due to injury during coaching/ competitions? Yes/No<br>If <b>yes</b> , how many times in last year students under your care sustained orofacial/dental injuries? |
| 2      | Did you come across any medical emergency during coaching/competition that required medical assistance? Yes/No   |
| 3      | Have you ever used mouthguards? Yes/No<br>If no, why not?<br>a. Never thought about it<br>b. Can't see a reason to wear it<br>c. Never had an injury<br>d. Too expensive   |
| 4      | Do you have knowledge of first aid of sports injuries? Yes/ No   |
| 5      | How often were sports injuries related to the non-use of protective devices?<br>Always/never/sometimes   |
| 6      | Do you feel that the use of protective devices will have any impact on the efficiency of players?<br>a. Reduce efficiency<br>b. Enhance efficiency<br>c. Any other comments  |
| 7      | In your opinion usage of protective devices in sports–<br>a. Always required irrespective of the game<br>b. Required based on the type of game<br>c. Not required at all   |
| 8      | What are the preventive measures taken by you to prevent injuries?<br>Helmet/chincap/mouth guard/others/no measures  |
| 9      | Are you satisfied with the level of knowledge you have in managing trauma? Yes/No  |
| 10     | In case of trauma, to whom do you refer the child?<br>a. Physician<br>b. Pediatrician<br>c. Pedodontist<br>d. Oral surgeon   |
| 11     | Which is a highly recommended sport for mouth guard according to you?<br>Skating/basketball/football/cricket/boxing<br>Any other? _____  |
| 12     | Have you interacted with medical/dental experts regarding safety measures in sports? Yes/No  |
| 13     | Did you save the dentist's contact numbers in case of emergency? Yes/No  |
| 14     | What are the equipment'/material available in the first aid kit in your academy?<br>a. Bandage<br>b. Pain killer<br>c. Antibiotic lotion<br>d. All of these<br>e. Don't know   |
| 15     | In your opinion, is there a need to have periodic preventive counseling of sports-related trauma prevention in your academy? Yes/No  |



**Fig. 1:** Distribution of participant children

Coaches with teaching experience ranging from 2 to 12 years participated in the study.

- 64% (16) never faced an incidence of orofacial trauma during their game practice session.
- When asked about awareness regarding mouthguards
  - 60% (15) of coaches felt that the non-use of protective devices can cause injuries sometimes (Table 4).
  - 76% (19) of coaches considered the use of protective devices based on the type of game (Table 5).
  - 56% (14) of instructors felt that the use of mouthguards will reduce the efficiency of players (Fig. 5).
- In cases of reported trauma, 76% (19) of coaches would refer the child to a physician (Fig. 6) and only 10% (3) were aware of dental specialties (6% oral surgeon + 4% pedodontist).

**DISCUSSION**

Dental injuries encountered in sports may vary from mild to severe depending on the frequency and intensity of the contact. Anterior teeth are most commonly affected which play a major role in the esthetics, phonetics, growth, and functional activities of the child. The frequency of dental trauma is significantly higher for children with increased overjet and inadequate lip coverage. Hence, initiating preventive orthodontic treatment in the early to middle mixed dentition period with overjet >3 mm has the potential to reduce the severity of injuries to permanent incisors.

Children engaged in sports undergo various dental injuries but the knowledge about its prevention and treatment is low among participant children, parents, and coaches. With the efforts from dentists and dental auxiliaries, a better awareness of types of injuries, treatment procedures, and the importance of mouthguards can be conveyed.

Among the participant children who had injuries in this study (22%), soft tissue lacerations (12%) occurred more frequently followed by bruise (3%) whereas hard-tissue injuries namely fractured tooth, loss of tooth, and fracture of facial bones were relatively less. This is in contrast to the study conducted by Mridula et al.<sup>7</sup> where chipping/fracture of teeth occurred commonly.

In the case of trauma prevention, appropriate emergency management is extremely important. It is interesting to know that in the present study, 35% of participant children knew that it was possible to reimplant the teeth. Our findings are in accordance with



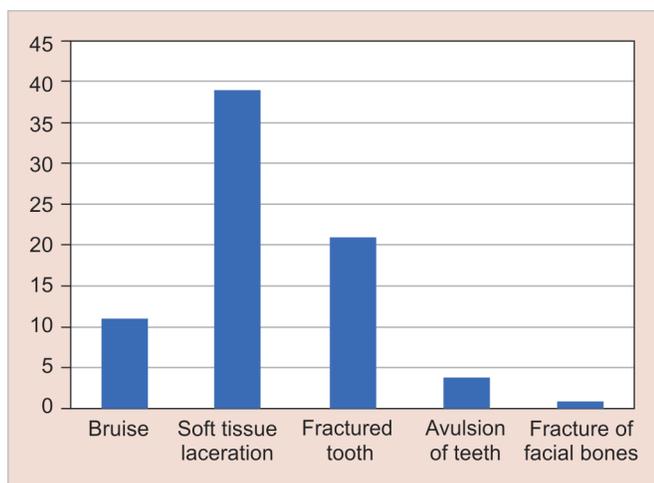


Fig. 2: Type of injuries sustained

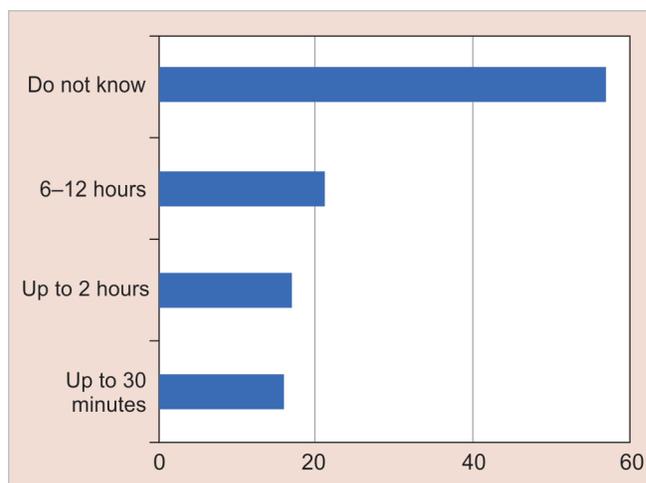


Fig. 3: Time duration to reimplant the avulsed tooth

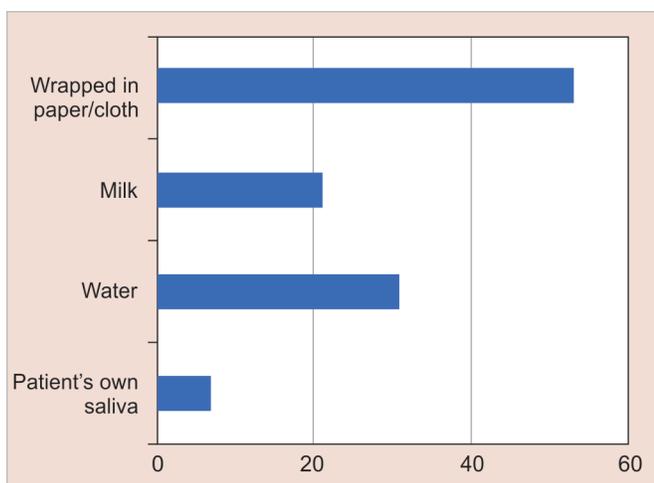


Fig. 4: Medium for carrying avulsed tooth

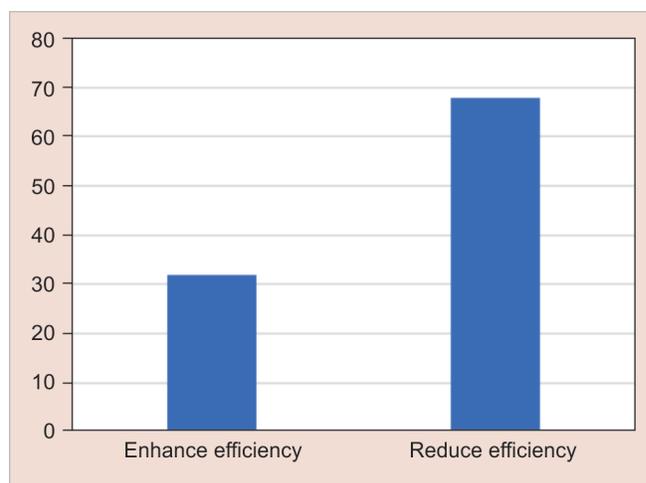


Fig. 5: Impact of protective devices on the efficiency of players

Table 3: Reasons for not using mouthguards

| Reasons for not using mouthguards        | No. of participants | Percentage |
|--|---------------------|------------|
| My coach does not tell me to do so       | 76                  | 24         |
| It is expensive                          | 9                   | 2          |
| Uncomfortable                            | 27                  | 8          |
| Never had an injury/not important for me | 214                 | 66         |

Table 4: Frequency of orofacial injury related to non-use of protective devices

| Frequency | No. of participants | Percentage |
|-----------|---------------------|------------|
| Always    | 8                   | 30         |
| Sometimes | 15                  | 60         |
| Never     | 2                   | 8          |

the studies conducted by Neeraja et al.<sup>8</sup> where 48% of subjects were aware of reimplanting an avulsed tooth.

In this study, 47% of the subjects preferred storage of avulsed tooth by wrapping it in cloth/paper followed by (28%) water and

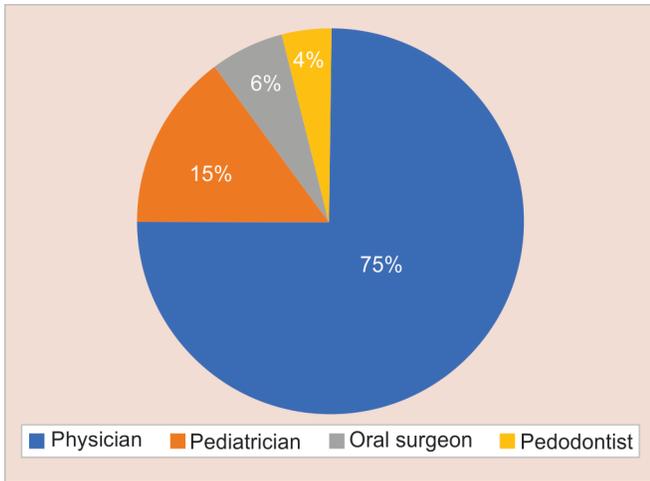
Table 5: Usage of protective devices in sports

| Usage  | No. of participants | Percentage |
|--|---------------------|------------|
| Always required irrespective of the type of game | 2                   | 8          |
| Required based on the type of game               | 19                  | 76         |
| Not required at all                              | 4                   | 16         |

(19%) milk. Mesgarzadeh et al.<sup>9</sup> reported that 38% of study subjects used tap water and 33.5% used milk as storage media.

The risk of oral injuries during sports can be reduced substantially by using mouthguards. Forty-four percent of participant children were aware that mouthguards can prevent oro-facial injuries. Similar findings were observed in studies by Dale, Levin et al., Cetinbaş et al., and Ferrari and Ferreria de Medeiros.<sup>10-13</sup> These findings support that knowledge alone on mouthguard use does not ensure its utilization. There should be collaborations between sports authorities and dental professionals to increase awareness and promote the usage of mouthguards.

In the present study, none of the participant children used mouthguards. This is in contrast to the studies conducted by Tiwari



**Fig. 6:** In case of trauma, the coach would refer the child to the following

et al.<sup>14</sup> and Kamalesh et al.<sup>15</sup> in which 41 and 28.8% of the participant children used mouthguards. This is due to a lack of awareness about mouthguards among participant children as well as non-compliance of the coaches regarding its importance.

The main reason for not using mouthguards is that the participant children felt that it is not important to them or they never had an injury. Mridula et al.,<sup>7</sup> Kamalesh et al.,<sup>15</sup> and Perunski et al.<sup>16</sup> have reasoned that children were not aware of mouthguards as it was not either suggested or made mandatory. They also felt it would affect phonetics.

In the present study, 68% of coaches felt that the use of protective devices reduces the efficiency of players. This is in contrast to the study by Priya et al. where 68% of coaches found that the protective devices enhance the efficiency of players.<sup>17</sup>

### Limitations of the Study

The sample size is small, only seven sports academics have been included in the study which will not reflect the entire knowledge and attitude of all the participant children and coaches in sports academics of Hyderabad city.

### CONCLUSION

In our study, many participants were aware of sports-related dental injuries but they lack knowledge about preventive and initial management. None of the children were using mouthguards. Pediatric dentists should conduct programs at schools/sports academics to educate coaches, teachers, and school children about strategies to prevent and manage sports-related dental injuries at schools/playgrounds. Pediatric dentists should take responsibility for protecting the winning smiles of children by bringing about a positive attitude of prevention of orofacial trauma, encouraging the usage of protective devices, and creating awareness regarding the importance of golden hour

in the management of dental injuries. Further studies are required in this aspect with a larger sample size.

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