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Sports Dentistry – A Scoping Review Of Prevalence And Awareness Of Sports Injury

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Abstract

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Introduction

The word 'sport' is derived from a combination of words meaning to carry away from work." For all age groups, a physically active lifestyle is necessary.1,8 Some of the major reasons for participation in sports and physical activity are pleasure, relaxation, competition, socialization, and enhancement of overall well-being and fitness."2 Children can have numerous physical and social benefits by taking part in sports activities. Dynamic interest in sports by youngsters has added to an expansion in sports-related injuries.3

"According to the American Academy of Pediatric Dentistry's policy on Prevention of sports- related orofacial injuries, sports mishaps account for 10–39% of all dental injuries in children." 4,8 It is bothersome that the majority of such injuries happen during active participation in various sports activities.5,8 Some observational studies have also suggested that traumatic dental injuries have an adverse impact on oral health-related quality of life in children and adolescents.3

Dental injury among physical game participants most affected part includes the upper front teeth, which may chip, break or slacken, or get avulsed. This damage might be disheartening for the youngster in this way, further influencing their appearance, discourse, and capability to consume food.7,8

Dental injuries which occur during sports activities be different from any other dental injuries, as it is possible to easily prevent or minimise frequency levels by the utilization of mouthguards that protect all "dental and periodontal structures."

Table 1: Prevalence of orofacial injuries in various contact sports.9

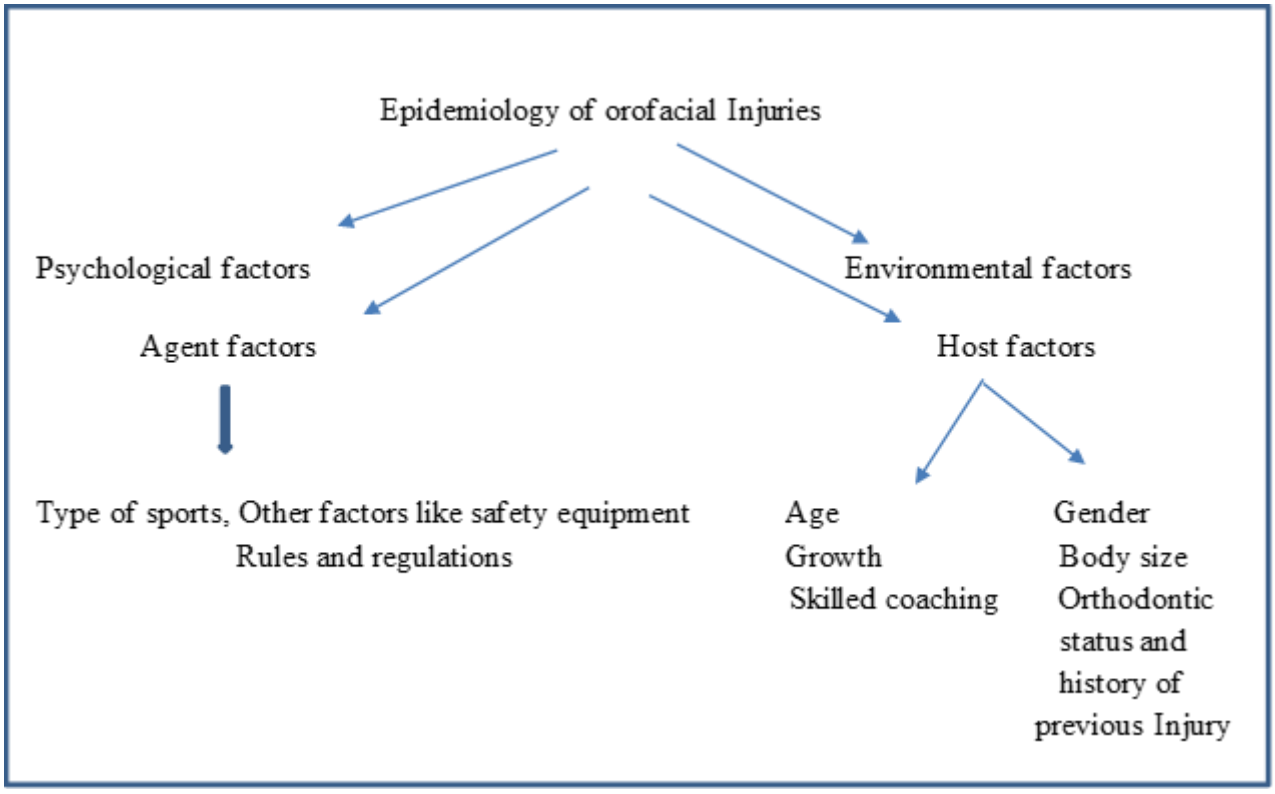
Various Sports	Prevalence	Author	Year
Basket Ball	80.6%(Professionals) 37.7(semiprofessionals)	Wenli Ma *et al.*	2008
Base Ball	27%	Pasternack JS *et al.*	1996
Foot Ball	16.6%	Esber C¸ aglar *et al*	2009
Hand Ball	21.8%	Galic T *et al.*	2018

Water polo	18.6%	Galic T *et al.*	2018
Swiss Rugby	39.5%	Stefan Schildknecht et al.	2012
Hockey	33.8%	Praveena J et al.	2018

Epidemiology of Orofacial Injuries

Epidemiology of Orofacial Injuries. The host-agent environment can be amended to study the epidemiology of sports injuries [Table/Fig-1]. Host factors like age, gender, skilled coaching and developmental stage of an individual, body proportion along with orthodontics of previous injuries affect the chances of occurrence of orofacial injuries in the athletes. Psychological status of the athlete as well as sports type also affects the performance.11,12

Figure 1. Different epidemiological factors involved in the occurrence of orofacial injuries.



Incidence and location

The face is the most vulnerable area of the body and is usually the least protected. Sports- related facial injuries account for 8% of all facial soft tissue injuries. Approximately 11-40% of all sports injuries involve the face.13 These injuries are most often due to direct hits with a ball or player-to-player contacts. Health care providers for athletes should be familiar with the anatomy of the facial region, the most common types of facial injuries, and the initial management of facial injuries.13 The most common types of sports-related facial trauma are the soft tissue injuries and the fractures of the "T-zone" bones (the nose, the zygoma, and the mandible). These injuries often occur in combination.13 Depending on the extent and the types

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of injury, some injuries can be managed at the sporting event site, with the athlete resuming play immediately. Sports injuries can cause potentially serious broken bones or fractures of the face. Three groups—children and adolescents, middle-aged athletes, and women—are particularly vulnerable.13 Contact sports have inherent dangers that put young athletes at special risk for severe injuries. Biking topped the list of sports-related injuries, followed by basketball, playground activities, football and a few other sports. Some sports injuries result from accidents; others are due to poor training practices, improper equipment, and lack of conditioning, or insufficient warm up and stretching.13

Types of tooth injuries

Some most common sports-related injuries are as follows:

1. Soft-tissue injury: It is the form of abrasion, contusion, and laceration that are commonly seen during sporting events. It should be evaluated with utmost care to rule out the fracture or other significant underlying injuries.14,15
2. Fracture: Maxilla is the most common site in majority ofthe cases. However, in 10% of the cases, the mandible could also get fractured. The most vulnerable part of the mandible in children as well as adults is condyle. As per the recent data, the condylar fracture in children has the potential to alter the growth of the lower jaw.15
3. Temporomandibular joint injury: Although every blow to the mandible does not result in fracture. However, these force gets transmitted to temporomandibular disc and its supporting structure causing the condyle to move posteriorly and compressing the retrodiscal tissue thereby leading to intracapsular bleeding followed by ankylosis of the joint.15
4. Tooth intrusion: The most severe form of displacement injury is the axially directed impact on the tooth which forces it into alveolar process and responsible for causing necrosis of pulp in 96% of the cases. The tooth becomes immobile and on percussion gives a high metallic sound.14,15
5. Tooth fracture: It is the most common type of dental injury. Maxillary central incisor is the most susceptible tooth to such injury.14,15
6. Avulsion: Avulsion of permanent teeth comprises 0.5%–16% of all the dental injuries. The injury causes the tooth to be knocked out or removed completely from the socket.16 Replantation is the treatment of choice, and the prognosis for the same depends on action taken at the place of accident and the time interval for which the tooth was out of the socket14
7. Impact of trauma on the mandible: Whenever the impact is delivered to the inferior aspect of the mandible, it causes rotational acceleration of the head, whereas the force on the anterior aspect of the mandible causes linear acceleration of the head.17

Shielding devices in sports dentistry

The most important aspect in preventing sports-related orofacial injuries is wearing basic protective devices such as properly-fitting helmets, facemasks and/or mouth guards. Perhaps the single most important piece of oral/facial protective equipment is a properly fitted mouth guard.13 Mouth guards should be worn when there is a possibility of body-to-body or body-to-equipment contact. Mouthguards help prevent injuries to the teeth, lips, gingiva, tongue, and mucosa. They cushion the blows that could cause jaw fractures, dislocations, and trauma to the temporomandibular joint. Mouth guards also aid in reducing the likelihood of concussion by maintaining a separation between the head of the mandibular condyle and the base of the skull.13

Prevention of Orofacial Injuries

Wearing mouth guards and headgear is the most common method for avoiding orofacial injuries during sports.

Mouthguard-Its role and necessity in sports dentistry

Any sport where the potential for dental trauma can exist (such as basketball, soccer, or wrestling) should consider utilizing mouthguards to protect the competitors. The establishments of mouthguard programs for athletes of all ages, genders, and sports may help to reduce the incidence of dental trauma.13,18

Three basic types of mouth guards are available:

1. Stock mouth guard
2. Mouth-formed mouth guard
3. Custom-made mouth guard

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The types which are currently available, custommade mouthguards fitted by a dentist, have been demonstrated to provide the greatest protection from dental injuries. Such mouthguards should therefore be recommended for use by those who participate in contact sports, and their provision should be actively encouraged by dental care workers,19 although some evidence exists to the contrary, the majority of studies have found the mouthguard to be the most effective way of preventing such injuries. It is also clear that the custom-fabricated mouthguard, in particular the pressure-laminated variety, is seen to afford most protection.20 Stock mouthguards are easily available but in limited sizes. They are made from rubber, polyvinyl chloride, or a copolymer of polyvinyl acetate.

Mouth-formed protectors: These consist of two sub-types. The shell-liner and the other one being the thermoplastic mouthguard. The shell-liner type is created by placing freshly mixed ethyl methacrylate in a hard shell, which is then placed in the athlete's oral cavity and moulded over the maxillary teeth and the associated soft tissues.21 The thermoplastic or preformed (also known as "boil and bite") is immersed in boiling water for 40-45 seconds before being transferred to cold water and adapted to the teeth.

Custom made mouth protectors: This is the most effective and best of the three options available. It is fabricated using a thermoplastic polymer and is built over a dentition model of the athlete designed by the dentist, and it perfectly fits the athlete's mouth.22

Helmet: Helmets are aimed to shield the skin on athletes' scalp and ears from abrasions, contusions, and lacerations. They guard the head, face and neck region against skull fractures and protect the brain and Central Nervous System (CNS) from severe concussions, loss of consciousness, cerebral haemorrhage, paralysis, brain damage, and death.23

Facemasks: It offers various degrees of horizontal defence to the maxillary bone and the region by including an extended finger, a closed fist followed by a forearm, or a helmet pointed at the zygomatic nasal pyramid or mandibular arch, respectively.24 One significant drawback of the facemasks is that they have a protruding object that an opponent can easily grab. During a fight, if an opponent pulls or twists the facemask, it could seriously hurt them physically and cause injury to their muscles, neck, or spinal column.25

Opportunities for a Sports Dentist

In India, only two institutes are offering Sports Dentistry programmes, i.e., the Indian Dental Association (IDA) which provides a fellowship in Sports Dentistry and the Institute of Sports Science and Technology, Pune (ISST, Pune) provides a Certificate Course in Sports Dentistry.26 The fellowship offered by IDA is available in both classroom and online format. Minimum requirement is BDS or equivalent degree from a recognised institution in India or overseas. The certificate course offered by ISST, Pune is Distance Diploma in Sports Dentistry (DDSD), which was started in the year 2008 and is for six months duration. BDS degree from any recognised university in India is the minimum eligibility criteria. Candidates can enroll throughout the year by registering on the official website of the respective institutes. With the exponential increase in the nation's population, and its ever-increasing demand for oral healthcare, it is imperative that more educational institutions offer specialisation in the field of dentistry to better cater to the community.12

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Figure 2. Diverse role of sports dentist26

Conclusion

Orofacial injuries that occur during sports activities are largely preventable.27 Mouth protection for athletes is one of dentistry's contributions to sports medicine. It is the responsibility of the dental profession, therefore, to become more active in sports injury prevention programs.

Mouthguards provide protection against injuries to the orofacial area, including the teeth, lips, cheeks and tongue, thereby reducing the incidence and severity of injuries that occur during athletic practice and competition. They also have been shown to prevent head and neck injuries, concussions and jaw fractures.26 The dentist can play an imperative task in informing athletes, coaches and patients about the magnitude of dental sciences in preventing orofacial injuries in sports. Education of all those involved is the key. Team physicians, dentists, athletic trainers, and coaches must take into consideration both the athlete's previous medical history and the sport. Our emphasis must be on improving the quality of mouth guards for player safety as one way of attempting to reduce the incidence of concussion in athletes.27 The epidemiology of orofacial injuries undergoes a paradigm shift with changes in equipment and regulations. There is need to popularize the use of orofacial protective devices in a variety of sports events by interacting with coaches, sports administrators and sports persons as well as familiarizing the Indian dentists in a relatively new field.28

Reference

1. Pinkham JR, Kohn DW. Epidemiology and prediction of sportsrelated traumatic injuries. Dent Clin North Am 1991;35(4):609–26.
2. Bahr R, Holme I. Risk factors for sports injuries—a methodological approach. Br J Sports Med 2003;37(5):384–92.
3. Patil RS, Dixit UB. Sports- related dental injuries in children: knowledge, past experiences and emergency preparedness in a group of sports coaches in two cities of India. Int Jour of Oral Health Dent 2018;4(2):98–103.
4. Padilha ACL, Constante HM, Fronza HP, et al. Orofacial trauma and mouthguard use in Brazilian rugby union players. Dent Traumatol 2021;37(1):53–7.
5. Micheli LJ, Jenkins MD. Sportswise: an essential guide for young athletes, parents and coaches. Boston MA: Houghton Mifflin Co.; 1990;24–7.

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6. Affairs AC. Using mouth guards to reduce the incidence and severity of sports-related oral injuries. J Am Dent Assoc 2006;137(12): 1712–20.
7. Dorney B. Dental screening for rugby players in New South Wales, Australia. FDI World 1998;7:10–13.
8. Tokas A, Sood S, Bhatia HP, Sharma N, Singh A. Sports-related Orofacial Injuries in Children: Awareness and Experience among Sports Coaches in Delhi Region of India. Int J Clin Pediatr Dent. 2022;15(4):450-54.
9. Mani S, Aparna S and Kumar M. Prevalence of orofacial injuries in contact sports: A systematic review. International Journal of Physical Education, Sports and Health 2019; 6(3): 39-46
10. Ramagoni NK, Singamaneni VK, Rao SR, Karthikeyan J. Sports dentistry: A review. J Int Soc Prev Community Dent. 2014;4(Suppl 3):S139-46.
11. Mir H, Shivalingesh K, Gangwar C, Ashraf W. Sports dentistry: A narrative review. Int Healthc Res J. 2020;4:81-7.
12. Mulla SA, Munshi FS, Bedia AS, Bedia S, Mistry L.Sports Dentistry- A Review of Prevalence and Awareness of Sports Injuries, Dental Implications and Opportunities in DentistryJ Clin of Diagn Res.2023; 17(11):ZE01-ZE06.
13. Saini R. Sports dentistry. Natl J Maxillofac Surg. 2011 Jul;2(2):129-31.
14. Kakar A. Sports dentistry. Curr Med Res Pract 2015;5:251-2.
15. Singhal A, Garg R. Sports dentistry: A review. Prevent 2014;4:6.
16. Fouad AF, Abbott PV, Tsilingaridis G, Cohenca N, Lauridsen E,Bourguignon C, et al. International Association of Dental Traumatology guidelines for the management of traumatic dental injuries: 2. Avulsion of permanent teeth. Dent Traumatol 2020;36:331-42.
17. Chapman PJ. Biomechanics and sequelae of impacts to the mid and lower facial region. In: McLean AJ, editor. Proceedings of the National Health and Medical Research Council Symposium: Head and Neck Injury in Road Accidents. Adelaide: University of Adelaide Press; 1988. 41-7.
18. Kumamoto DP, Maeda Y. A literature review of sports-related orofacial trauma. Gen Dent 2004;52:270-80.
19. Scott J, Burke FJ, Watts DC. A review of dental injuries and the use of mouthguards in contact team sports. Br Dent J 1994;176:310-4.
20. Newsome PR, Tran DC, Cooke MS. The role of the mouthguard in the prevention of sports-related dental injuries: A review. Int J Paediatr Dent 2001;11:396-404.
21. Guevara PA, Ranalli DN. Techniques for mouthguard fabrication. Dent Clin North Am. 1991;35:667-82.
22. Padilla RR, Lee TK. Pressure-laminated athletic mouth guards: A step-by-step process. J Calif Dent Assoc. 1999;27:200-09.
23. Ramagoni NK, Singamaneni VK, Rao SR, Karthikeyan J. Sports dentistry: A review. J Int Soc Prev Community Dent. 2014;4:S139-46.
24. Watterson JS. Inventing modern football. Am Heritage. 1988;39:113.
25. Reed RV. Origin and early history of the dental mouthpiece. Br Dent J.1994;176:478- 80.
26. Flanders RA, Bhat M. The incidence of orofacial injuries in sports: A pilot study in Illinois. J Am Dent Assoc 1995;126:491-6.
27. Jackson EW Sr. Commentary: Role of properly fitted mouth guards in prevention of sport-related concussion. J Athl Train 2001;36:339-41.
28. Lehl G. Perception of Chandigarh sports coaches regarding orofacial injuries and their prevention. J Indian Soc Pedod Prev Dent 2005;6:67-70.

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