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Assessing Dental Sports Injuries among Individuals of Bhopal City: A Survey

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Abstract

Context: Contact sports are greatly enjoyed by all age groups especially the younger generation. This also increases the chances of orofacial injuries. Thus causing minor cuts, loss of tooth or even fracture of facial bones. The protective gear is available but the level of awareness among the athletes is low. This study thus evaluates occurrence of dental injuries among participants about preventive measures.

Aims: The aim of this study is to evaluate the occurrence of dental injuries among individuals playing sports and to assess the level of knowledge among participants about preventive measures and dental injuries.

Settings and Design: Cross-sectional study

Material and Methods: A cross-sectional study was conducted among 201 athletes. Data were collected using a structured, interviewer-administered questionnaire to assess the prevalence of oral injuries sustained during sports, the use of mouthguards, and the level of awareness among athletes regarding the importance of mouthguard use.

Statistical analysis used: Data was entered in Microsoft Excel spreadsheet and descriptive data were analyzed using SPSS software Version 26.0 (SPSS Inc., Chicago, IL,

USA). Descriptive statistics and chi-square test were used to analyze the results.

Results: A total of 201 players participated in this investigation. The majority of participants (45.3%) had played sports for 1-5 years, 34.8% for more than 5 years, and 19.9% for more than 10 years.

In the current study, 37.3% of athletes reported having a face injury, break, or bruise while competing, while 62.7% did not. While 80.6% did not encounter any chipped, fractured, or loose teeth while playing, 19.4% did.48.8% had suffered a soft tissue injury while participating in sports.

In terms of awareness, 78.1% of athletes had not visited a dentist following a sports injury, whereas 21.9% had. The majority of players (64.2%) are aware that mouth guards can help protect teeth. Additionally, 50.2% of athletes wear mouth guards.

Conclusions: This study highlights that many athletes are not comfortable using mouthguards. This reluctance increases the risk of orofacial injuries during sports. To address this, there is a need for better education on the benefits of mouthguards, promoting custom-fitted options for enhanced comfort, and fostering a culture of safety in sports.

Keywords: Awareness, Mouth Guard, Orofacial Injuries, Dental Trauma, Sports Dentistry

Introduction

Dental trauma sustained during sports is the primary link between dentistry and sports. The goal of sports dentistry is to prevent oral and facial injuries, along with associated oral diseases and their manifestations. It primarily focuses on two things: first, treating orofacial injuries, and second, preventing orofacial injuries caused by sports.[1] To provide comprehensive care, a dentist must be knowledgeable and adapt in the areas of oral surgery, endodontics, operative dentistry, orthodontics, hospital dentistry, and patient behaviour management.[2]

Contact sports are defined as those sports in which players physically interact with each other, trying to prevent the opposing team or person from winning[3] Due to the high impact contact, athletes who play contact sports are more likely to experience orofacial and dental injuries. Contact sports make athletes more vulnerable to tooth damage, resulting in a very high incidence of dental trauma ranging from 2% to 33%[3]

The risk of oral injuries during performing sports can be reduced markedly using mouthguards. It offers protection by untying the cheeks and lips from the teeth, making users less vulnerable to soft-tissue laceration, and preventing opposing arches from traumatic contact, these protective devices provide a resilient, protective surface to distribute and dissipate transmitted forces on impact.[2]

Orofacial injuries consist of dental injuries (enamel infractions, crown and root fractures, concussions, luxations, and avulsions), lacerations of the soft tissues (lips, cheeks, and tongue), injuries to the temporomandibular joint, and mandibular fractures.[4]

Mouthguards are strongly recommended for all sports when there is a risk of orofacial injuries because they can prevent injuries to the teeth and face.[5] There are three types of mouthguards: pre- fabricated stock mouthguards (the mouthguard is not fitted or adjustable to the patient's teeth), mouth- formed or “boil- and- bite” mouthguards (the personalized molding process of the thermoplastic mouthguard is completed by the patient), and custom-made mouthguards (the mouthguard is personally fabricated for each patient by a dentist).[6] It is proven that properly fitted mouthguards provide protection by absorbing and dissipating the impact energy of traumatic blows.[7] Custom-made mouthguards usually fit more comfortably and offer more protection than mouth-formed and pre-fabricated mouthguards. They also cause less disruption to oral function[1]

The most common method of lowering the frequency of sports related Traumatic Dental Injury (TDI) is the wearing

of mouthguards, which is also always advised following a TDI to prevent further harm.[8,9]

Most athletes are unaware of the need for mouthguard use, while others are concerned about communication issues, poor retention, breathing issues, and unpleasant aesthetics. Regardless of their skill level, athletes should be aware of preventive and precautionary measures and use basic safety devices such as safety helmets, face protectors, and mouthguards that are fitted appropriately.

This study was intended to assess the awareness of dental injuries and mouthguard usage among young trainees who engage in these contact sports, as well as to evaluate the experience of dental trauma among the trainees in the BHOPAL city of Madhya Pradesh.

Subjects and Methods

A cross-sectional questionnaire survey was conducted at the Tatya tope stadium and Major Dhyanchand Hockey stadium, Bhopal, after obtaining prior permission from the authorities. The study was approved by the Institutional Ethics Committee (IEC) of Rishiraj College of Dental Science and Research Centre, Bhopal, Madhya Pradesh. The study was carried out from July 2023 to September 2023. The sports were chosen based on the likelihood of dental injury.

This questionnaire study aims to understand the knowledge and awareness of sports injuries and of using mouthguard while playing.

A structured, prevalidated, interviewer-guided questionnaire was developed for data collection which contained 10 closed-ended questions given below. The investigators interviewed each player separately to avoid blanket answers.

Each athlete was surveyed with questions about the types of sports they participated in, their knowledge and use of mouthguards, whether they owned one, and any previous experiences with oral injuries during sports activities. Additionally, they were encouraged to wear a mouthguard during games.

The collected data were statistically analyzed.

	Questionnaire
1	Name
2	Gender Age
3	Duration of playing sports? a. 1-5 years b. More than 5 years c. More than 10 years
4	Have you ever Injured/broken/bruise your face while playing? a-Yes b-No
5	Did you chip/fracture/loosened your teeth while playing sports? a-Yes b-No
6	Did you cut your soft tissue (lip/tongue/cheek) while playing sports? a-Yes b-No
7	Have you been to dentist after sports injury? a-Yes b-No
8	Are you aware that mouthguards can prevent dental injury? a-Yes b-No
9	Do you use mouthguards? a-Yes b-No
10	If 'No' than why do you not use mouthguard? a-My Coach does not teach me to do so b-It is expensive c-It is not important for m d-I am not comfortable with these e-I am unaware

Results

A total of 201 players participated in this investigation. Of the 201 participants, 26.4% were women and 73.6% were men. 39.8% of participants were between the ages of 28-33, 33.3% were between the ages of 16-21, 19.9% were between the ages of 22 -27, and just 7% were older than 34. The majority of participants in this study (45.3%) had played sports for 1-5 years, 34.8% for more than 5 years, and 19.9% for more than 10 years. (Table 2)

In the current study, 37.3% of athletes reported having a face injury, break, or bruise while competing, while 62.7% did not. While 80.6% did not encounter any chipped, fractured, or loose teeth while playing, 19.4% did.48.8% had suffered a soft tissue injury while participating in sports. (Table 3, Figure 1)

In terms of awareness, 78.1% of athletes had not visited a dentist following a sports injury, whereas 21.9% had. The majority of players (64.2%) were aware that mouth guards can help protect teeth. Additionally, 50.2% of athletes do wear mouth guards. (Table 4, Figure 2 & 3)

When we asked athletes why they did not wear mouthguards, the majority of them (43%) stated that they did not feel comfortable using them. 29% of respondents claimed they don't wear mouthguards due to ignorance. According to 14% of respondents, mouth guards are not important to them. Some athletes (9%) claim that it is highly costly, and 5% claim that their coach did not educate them how to wear mouth guard. (Table 5, Figure 4)

When comparing the awareness and practice of preventive measures against dental injuries among athletes by number of years of participation, the current study (Table 6) found that athletes with 1–5 years of experience had greater rates of dental care (12.9%) following a sports injury than athletes with more than 5 and 10 years of experience, and the difference was statistically significant (p-0.02). One to five-year-olds were more aware of the mouth guard's ability to prevent dental injuries than other experienced groups, and the difference was statistically significant (p-0.000). Mouth Guard was used by 29.4% of people with 1–5 years of experience, compared to those with 5–10 years of experience. This difference is statistically significant (p-0.001).

Discussion

Dental trauma is one of the most common dental emergencies that significantly impacts athletes.

In the present study 37.3% athletes have sustained facial injury, 19.4% had chipped, fractured or loosened teeth, 48.8% had suffered a soft tissue injury. Mouth guards were used while playing sports by 50.2% athletes, rest opted not to wear mouth guards due to uncomfortable (43%), ignorance (29%), unnecessary (14%), high cost (9%), coach does not educate them (5%).

A similar study conducted by Galic T et al., indicated that 58 young athletes (25.3%) had sustained one or multiple sports-related orofacial injuries, while 31 athletes (13.5%) had experienced sports-related dental injuries and 49%of participants wore mouthguards, revealed that the most common reason for not wearing a mouthguard was that it was considered unnecessary (37%), uncomfortable (21.5%), or interfering with breathing or communication (5.2%)[10].

In studies by Qudeimat MA et al. (2019), and Tsuchiya S et al. (2017), the prevalence of traumatic dental injury among soccer players was reported to be 25% and 13.3% among Japanese athletes, respectively[11,12]

A study by Selva S et al. (2018), reported a higher prevalence of orofacial injuries among kabaddi players (75%)[3], the prevalence of fractured teeth was 29% among kabaddi players in Madurai city.

Sathyapsad S et al. (2018), and Bawazir OA et al. (2022), who reported that 58% and 57.3%, respectively, were aware of the use of mouthguards[2,13]. The rate of awareness of mouthguards was 48.6% in child athletes in the study conducted by Mojarad F et al. (2020)[14].

The risk of oral injuries during performing sports can be reduced using mouthguards. Mouthguards offer protection by separating the cheeks and lips from the teeth, making users less susceptible to soft-tissue laceration, and preventing opposing arches from traumatic contact, and these protective devices provide a resilient, protective surface to distribute and dissipate transmitted forces on impact[15].

Various studies have shown that although the participants were well aware of the importance of mouthguards, still very few were actually using them. These findings support

that knowledge alone on mouthguard use does not ensure its utilization. Collaborations between sports authorities and dental professionals are recommended to increase awareness and promote the use of mouthguards among athletes and coaches[16].

The present study revealed that cost is not a factor in not wearing a mouthguard, but athletes often feel uncomfortable wearing mouthguard, even though it protects against oral injuries. Subjective factors such as difficulty in speech, looseness of the appliance, difficulty, or obstruction with breathing can also influence the acceptability of the appliance.

Mouthguards were designated as custom-fitted where a plaster cast of the teeth had been made by a dentist or dental technician in order to form the guard. Non- custom mouthguards were stock guards usually purchased 'over-the-counter' where the guard is heated in boiling water and then moulded to the player's mouth by wearing the guard as it cools. The widespread use of non-custom mouthguards which offer little injury protection may pose a medical risk to the wearer should be discouraged by key sporting administrators, insurance companies, coaches, players and parents. Custom fitted mouthguards are strongly recommended at all levels to be worn during training and matches[17].

The Academy for Sports Dentistry (ASD) "recommends the use of custom fabricated mouthguard made over a dental cast and delivered under the supervision of a dentist." The

ASD strongly supports and encourages a mandate for the use of a properly fitted mouthguard in all collision and contact sports[18].

In developing countries such as India, not much importance is given for protection against orofacial injuries in the sports area which can be rectified by conducting various awareness programs.

Conclusion

This study highlights that many athletes are not comfortable using mouthguards. This reluctance increases the risk of orofacial injuries during sports. To address this, there is a need for better education on the benefits of mouthguards, promoting custom-fitted options for enhanced comfort, and fostering a culture of safety in sports through advocacy and awareness campaigns.

Dentists play a vital role in promoting the use of mouthguards among athletes. They can educate athletes, sports personnel and coaches on the importance of wearing mouthguards to prevent oral injuries and provide custom-fitted options that offer greater comfort and protection compared to over-the-counter versions. By raising awareness and ensuring a proper fit, dentists can help encourage more athletes to adopt mouthguards as an essential part of their sports gear.

Currently there is a very limited data regarding sports dentistry in India. The Sports Authority of India (SAI) does not have any policy on Sports Dentistry. The SAI should also make use of mouth guards mandatory in contact sports[19].

The American college of Prosthodontist recommends the use of custom-made mouthguards for all contact sports and any recreational activities that may result in orofacial injuries.

National Federation of State High School Association (NFHS) in the United States also mandates mouthguard use in sports like football, hockey, ice hockey, lacrosse, and wrestling.

Given the proven benefits of mouthguard in reducing sports-related dental injuries, it is advisable for athlete, coaches, and sports organization in India to consider adopting the use of properly fitted mouthguards, even in the absence of formal regulations. This proactive approach can enhance athlete safety and potentially mitigate the severity of orofacial injuries during sports activities.

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Legend Tables and Figures

Table 1: Demographic distribution of study participants (n-201)

Demographic variables		n (%)
Gender	Male	148(73.6%)
	Female	53(26.4%)
Age group	16-21 years	67(33.3%)
	22-27 years	40(19.9%)
	28-33 years	80(39.8%)
	Above 34 years	14(7.0%)
Duration of playing sports	1-5 years	91(45.3%)
	More than 5 years	70(34.8%)
	More than 10 years	40(19.9%)

n- Number of subjects

Table 2: Frequency distribution of various types of dental sports injuries among sports individuals (n-201)

	Yes	No
Have you ever Injured/broken/bruise your face while playing?	75(37.3%)	126(62.7%)
Did you chip/fracture/loosened your teeth while playing sports?	39(19.4%)	162(80.6%)
Did you cut your soft tissue (lip/tongue/cheek) while playing sports?	98(48.8%)	103(51.2%)

Figure 1: Frequency distribution of various types of dental sports injuries among sports individuals (n-201)

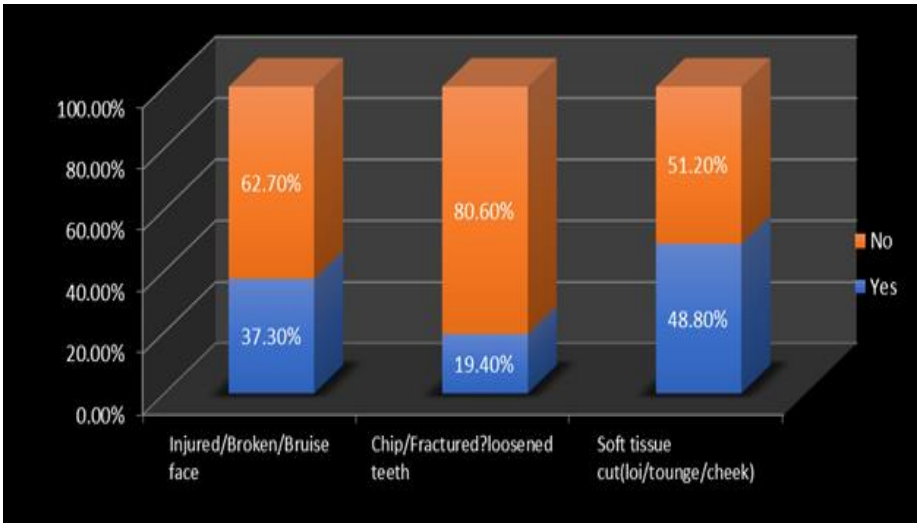

Table 3: Awareness and practice regarding preventive measures against dental injuries

	Yes	No
Have you been to dentist after sports injury?	44(21.9%)	157(78.1%)
Are you aware that mouthguards can prevent dental injury?	129(64.2%)	72(35.8%)
Do you use mouthguards?	101(50.2%)	100(49.8%)

Figure 2: Frequency distribution of sports individuals reported to dentist after injury

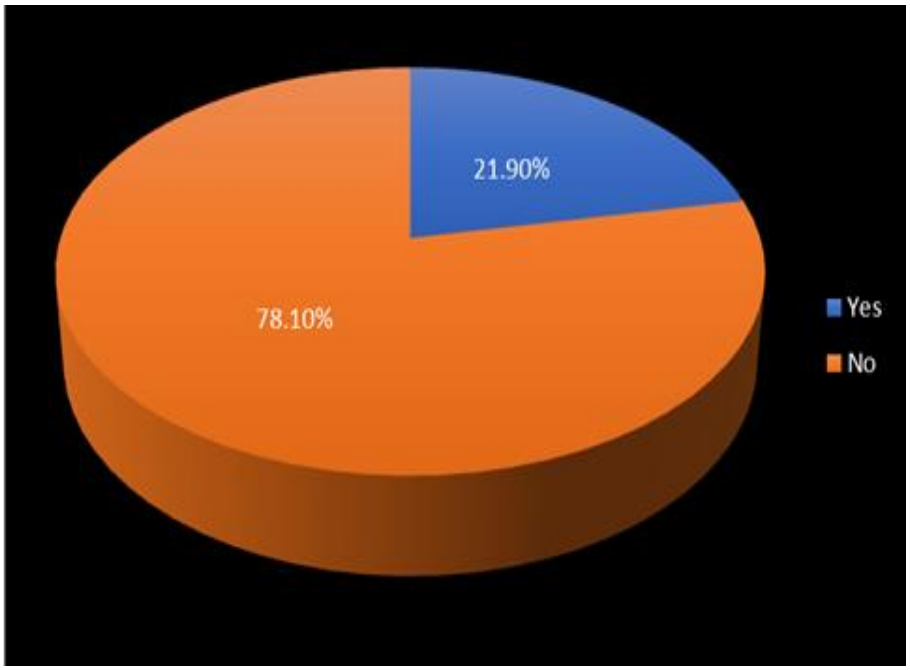

Figure 3: Awareness and use of mouthguard for prevention of sports injury

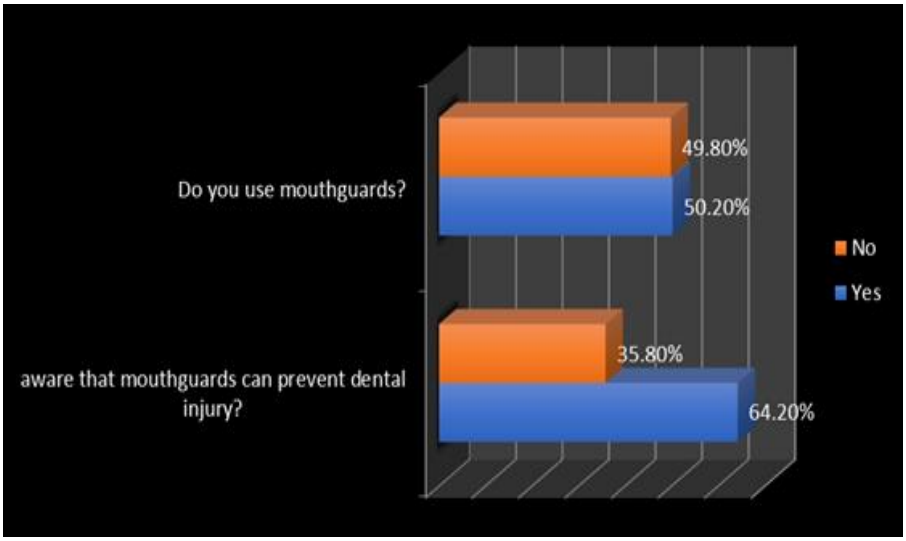

Table 4: Frequency distribution of reason behind not using mouthguards among sports individuals (n-100)

Reason behind not using mouthguards	n(%)
My Coach does not teach me to do so	5(5.0%)
It is expensive	9(9.0%)
It is not important for me	14(14.0%)
I am not comfortable with these	43(43.0%)
I am unaware	29(29.0%)

Figure 4: Frequency distribution of reason behind not using mouthguards among sports individuals

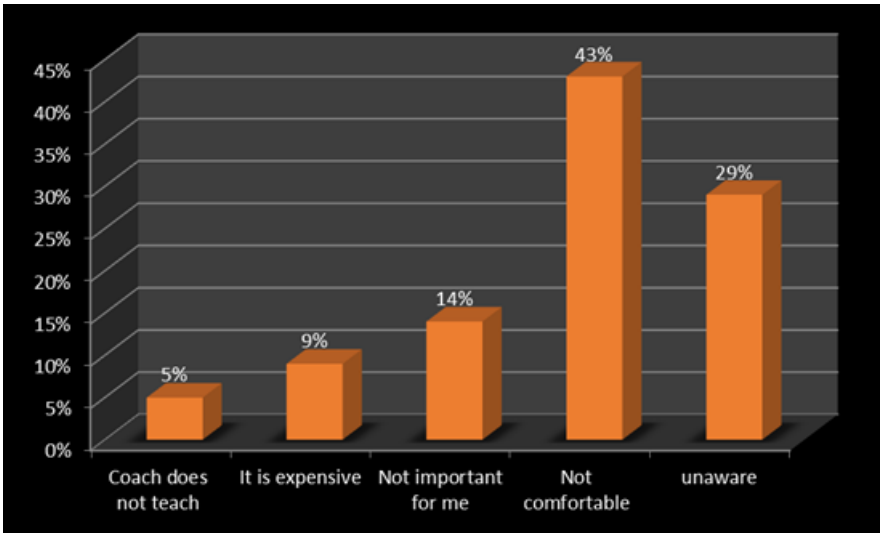

Table 5: Level of awareness and practice regarding preventive measures against dental injuries among sports individuals according to year of playing sports

Awareness and practice questions		Year of playing sports				Chi-square value	p-value
		1-5 years	More than 5 years	More than 10 years	Total		
Have you been to dentist after sports injury?	Yes	26 (12.9%)	8(4.0%)	10(5%)	44(21.9%)	7.083	0.029*
	No	65(32.3%)	62(30.8%)	30(14.9%)	157(78.1%)		
Are you aware that mouthguards can prevent dental injury?	Yes	59(29.4%)	31(15.4%)	39(19.4%)	129(64.2%)	31.38	0.000*
	No	32(15.9%)	39(19.4%)	1(0.5%)	72(35.8%)		
Do you use mouthguards?	Yes	59(29.4%)	29(14.4%)	13(12.9%)	101(50.2%)	14.96	0.001*
	No	32(15.9%)	41(20.4%)	27(13.4%)	100(49.8%)		

*Statistically significant