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Evaluation Of Knowledge and Occurrence of Sports Related Dental Injuries Among Students Studying in Maharishi Markandeshwar Medical College & Hospital, Solan, Hp

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Abstract: *Now a days, a great enthusiasm can be seen among young adults to participate in contact sports. However, it exposes them to a risk of sustaining trauma specially to their orofacial structures.* ***Aim:*** *To evaluate the occurrence of dental injuries, the level of knowledge among medical students about preventive measures and management of dental trauma during sports in Maharishi Markandeshwar Medical College and Hospital (MMMC&H), Solan, Himachal Pradesh.* ***Material And Methods:*** *This cross- sectional study was carried out on 200 randomly selected students studying in a medical college aged between 18-25 years. The study was carried out using a structured questionnaire which comprised of 15 items regarding the sports the students were involved in, any dental injury incurred during sports, whether they knew that avulsed tooth could be reimplanted, whether they use mouthguards etc. the participants consisted of 100 males (50%) and 100 females (50%) with a mean age of 22.35 years.* ***Results:*** *Out of 92 participants who sustained injury during sports, 34 (36.9%) subjects had experienced chipping or fracture of teeth, 50 (54.34%) had experienced soft-tissue laceration and 8 (8.6%) suffered from avulsion of teeth. Out of the total participants, 103 (51.5%) knew that it was possible to replant the teeth and 97 (48.5%) did not know that it was possible to replant the teeth. Out of the total participants, 124 (62%) did not know what is the best time to put the teeth back in the mouth and 76 (38 %) answered in affirmative with variable answers. Of the total participants, 90 (45%) answered that they would carry avulsed tooth in wrapped in cloth, 42 (21%) water, 26 (13%) in mouth/saliva, 22 (11%) in Hanks' Balanced Salt Solution (HBSS) and 20 (10%) answered others. Of the total participants, 182 (91%) were aware that mouthguards prevent injury and 18 (9%) did not know about mouthguards. Out of the total participants, 54 (27%) used mouthguards and 146 (73%) had never used mouthguards.* ***Conclusion:*** *Very less information exists about the dental injuries in sports. Also, the level of awareness regarding the prevention and management of orofacial trauma is scarce. In such a scenario, it becomes imperative that children and adolescents should be educated and made aware about the same starting from their initial years since knowledge imbibed early goes a long way. Nevertheless, it will help children to live a healthy life away from any disfigurement.*
Keywords: *Sports, Dental, Trauma, Knowledge, Prevention*

Introduction: In today's hectic scenario where there is race against time every individual tries to engage themselves in recreational and competitive sports activities for both physical and psychological well being. However, sport is a double-edged sword regarding effects on health. Apart from its positive effects it also poses risk of injury to the participants. Dental injuries are the most common type of orofacial injury sustained during participation in sports[1]. As reported in a recent meta-analysis, the prevalence of dental injuries is 17.5% in children and adolescents worldwide and two times higher in boys than that in girls [2]. According to another study 25% of Traumatic Dental Injuries (TDIs) involve adolescents (8-14) and young adults (15-23 anni)[3]. Also the prevalence of trauma remains high in contact sports where the physical interaction between participants is direct or indirect[4]. Dental trauma refers to injuries resulting from impacts to the teeth, as well as the surrounding hard and soft tissues within the mouth and oral cavity[5]. Hard-tissue injuries include those injuries which involve injuries of teeth and facial bones, such as tooth intrusions, luxations, crown and/or root fractures, complete avulsions, and dentofacial fractures.[6] Dental injury among contact sport participants commonly involves the upper front teeth, which may chip,

fracture, loosen, or be avulsed. This injury may be devastating, affecting appearance, speech, and the ability to eat. In addition to physical aspects, it also affects psychosocial development through aesthetic concerns[7]. Sports dentistry had its origins in 1980s and it encompasses the recognition of the injury-prone dentition and expertise in immediate management of dental injuries[6]. In spite of high occurrence of trauma during sports, sports dentistry has been a neglected field all over the world and also in India. Very few Indian-based epidemiological information exists about the incidence of dental injury in sports. Moreover, despite national medical and dental groups recommending the use of professionally fitted headgears and mouthguards to minimize head, facial, and dental injury, it has not been very popular among children in India. This study was done to evaluate the knowledge, awareness, and occurrence of dental injuries among medical students studying in a medical college, Himachal Pradesh.

MATERIAL AND METHOD

This cross – sectional study utilising a structured questionnaire adopted from Goswami M 2017[6] was performed on 200 medical students studying in MMMC&H, Kumarhatti, Solan, HP from March to April 2015. The students who participated in this study aged between 18-25 years and were comfortable reading English language of the questionnaire. Informed consent was taken from all the participants prior to beginning of the study. The protocol for the study was approved by the Institutional Ethical Committee (IEC), MMMCH, Kumarhatti, Solan. **(MMMCH/IEC/25/1009)**. Questionnaire contained total of 15 items. The questions assessed students' knowledge regarding the prevention and management of sports related dental injuries. Questions included type of sports that students were involved in, whether any dental and soft tissues injuries incurred; specifically loosening of teeth, fracture of teeth, bruises on the face and lacerations on lips, tongue or cheeks while participating in sports activities. Participants were asked whether they knew that it was possible to reimplant the avulsed tooth and also the extraoral time within which it is possible to reimplant the teeth. Participants were asked whether they use mouthguard during sport activities and if not, state the reasons of not using it. The collected data was statistically analysed.

Questionnaire

DEPARTMENT OF DENTISTRY
MAHARISHI MARKANDESHWAR MEDICAL COLLEGE AND HOSPITAL,
KUMARHATTI, SOLAN, (HP)

1. NAME:
2. AGE:
3. GENDER:
4. TYPE OF SPORTS YOU PARTICIPATE:
    - CONTACT/COLLISION (FOOTBALL, MARTIAL ARTS, WRESTLING, BOXING)
    - LIMITEDCONTACT/IMPACT (BASKETBALL, CYCLING, GYMNASTICS, SKATING, SQUASH, VOLLEYBALL)
    - STERNOUS CONTACT (TENNIS, WEIGHTLIFTING, SWIMMING)
    - MODERATELY STERNOUS CONTACT (BADMINTON, TABLE TENNIS)
    - NON STERNOUS CONTACT (ARCHERY, GOLF)
5. HAVE YOU EVER INJURED YOUR FACE WHILE PLAYING SPORTS?
   YES NO
6. DID YOU CUT YOUR LIP/TONGUE/CHEEK WHILE PLAYING SPORTS?
   YES NO
7. DID YOU CHIP/FRACTURE YOUR TEETH WHILE PLAYING SPORTS?
   YES NO
8. DID YOUR TEETH COME OUT WHILE PLAYING SPORTS?
   YES NO
9. DO YOU KNOW THAT IT IS POSSIBLE TO PUT TEETH BACK INTO YOUR MOUTH (REIMPLANT)?
   YES NO

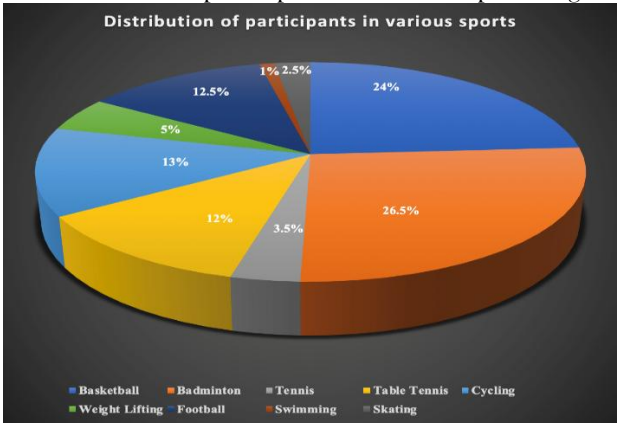
10. IN YOUR OPINION WITHIN WHICH PERIOD OF TIME TOOTH SHOULD BE REIMPLANTED? ·
    - UPTO 30 MIN ·
    - UPTO 1 HOUR ·
    - UPTO 2 HOUR ·
    - UPTO 6 HOUR ·
    - UPTO 12 HOUR ·
    - UPTO 24 HOUR ·
    - DO NOT KNOW
11. HOW WOULD YOU STORE/CARRY AN OUT OF SOCKET TOOTH TO YOUR DENTIST?
    - IN YOUR MOUTH/SALIVA
    - WATER
    - WRAPPED IN CLOTH OR COTTON
    - HBBS SOLUTION
    - OTHERS

12. HAVE YOU BEEN TO DENTIST AFTER SPORTS INJURY?
    YES NO
13. ARE YOU AWARE THAT MOUTHGUARDS CAN PREVENT DENTAL INJURY?
    YES NO
14. DO YOU USE MOUTHGUARDS?
    YES NO
15. WHY YOU DO NOT USE MOUTHGUARDS?
    - MY COACH DOES NOT TELL ME TO DO SO
    - IT IS EXPENSIVE
    - IT IS UNCOMFORTABLE
    - IT IS NOT IMPORTANT FOR ME

SIGNATURE:
DATE:

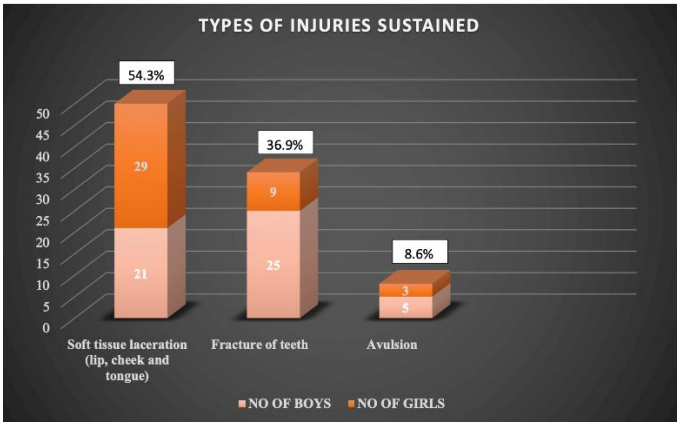
RESULTS

A total of 200 students studying in medical college in Solan, HP participated in the study. In order to surpass the gender bias the number of male and female students was kept equal i.e. 100 each. The participants belonged to the age group of 20-25 years with mean age being 22.35 years. Students participated in various sports activity ranging from football, basketball, badminton, skating, tennis, table tennis, swimming, etc. The distribution of participants in various sports is given in Graph 1.



Graph 1: Distribution of Participants in Various Sports

Out of the total participants, 92 (46%) had sustained orofacial injury during sports and 108 (54%) had never sustained orofacial injury in any form. The type of injury sustained varied from chipping or fracture of teeth, soft-tissue laceration and avulsion of teeth (Graph 2). Out of 92 participants, 34 (36.9%) subjects had experienced chipping or fracture of teeth, 50 (54.34%) had experienced soft-tissue laceration, 8 (8.6%) suffered from avulsion of teeth.



Graph 2: Type of Injuries Sustained

Out of the total participants, 182 (91%) were aware that mouthguards prevent injury and 18 (9%) did not know about mouthguards but only 54 (27%) agreed for using mouthguards. Most of the participants 146 (73%) did not use mouth guards during sports because they thought that it was not important 31 (21.2 %), uncomfortable 75 (51.3 %), or expensive 40 (27.3 %). Various reasons for not using mouthguards have been summarized in Table 1

Table 1: Reasons for Not Using Mouthguard during Sports

Reason	Number of Participants	Percentage
My coach does not ask me to wear	0	0%
It is not important	31	21.2%
It is uncomfortable	75	51.3
It is expensive	40	27.3%

Out of the total participants, 103 (51.5%) knew that it was possible to reimplant the teeth and 97 (48.5%) did not know that it was possible to reimplant the teeth. Most of the children 124 (62%) were unaware of the time duration during which teeth could be reimplanted, while others responded with variable timing about reimplantation of tooth. The data has been summarized in Table 2.

Table 2: Time Duration for Tooth to be Reimplanted

Time Duration	Number of Participants	Percentage out of total Participants
Within 30 minutes	**13**	**6.5%**
Within 1 hour	**19**	**9.5%**
Within 2 hours	**8**	**4%**
Within 6 hours	**18**	**9%**
Within 12 hours	**12**	**6%**
Within 24 hours	**6**	**3%**
Do not know	**124**	**62%**

Various medium can be used for carrying an avulsed tooth. Almost 45% of the participants thought cloth was the best suited medium for carrying avulsed teeth to dentist, while only 11% knew that HBSS was the best suited medium. The data has been summarized in Table 3

Table 3: Medium for Carrying Avulsed tooth in case of Orofacial Injury

Medium	Number of Participants	Percentage out of total Participants
Mouth/Saliva	26	13%
Water	42	21%
Wrapped in Cloth	90	45%
HBSS	22	11%
Others	20	10%

Discussion: Physical activities specially sports can increase the risk of dental injuries due to impacts and collisions. Common injuries include tooth fracture, luxation, avulsions and soft tissue lacerations. While some sports like basketball, baseball, boxing etc have higher incidence of dental injuries but using mouthguards and other protective gears can prevent the dental trauma. The present study reveals about 46% of students studying in medical college had experienced one or more form of orofacial injury during sport activities whereas the other studies done by Goswami M[6], Tulunoglu and Ozbek[8] and Persic et al[9] show 20.9% 22.3% and 20.4% of the participants reported to have experienced oral injuries respectively. This higher percentage in our study may be attributed to the fact that the participants were young adults who are much more enthusiastic and risk taking and are eager to participate in multiple sports at the same time.

Among the students who had sustained injuries in this study, soft tissue lacerations on lips, tongue, cheek accounted for most (54.3%) of the dental injuries followed by chipping and fracture of teeth (36.9%). The study by Mulla - Bolla M[10] in 2003 stated that a higher rate of soft tissue laceration than dental injury was found at all ages. This study corroborated with our findings. On the contrary another study reported that chipping or fracture of teeth was most common among the participants in that study.

The percentage of participants who experienced avulsion i.e. tooth being completely knocked out of the socket was relatively low (8.6%) in the present study. The fact that such injuries occur when participants either fall on their face or they are hit by hard objects from sports equipment and collision between players supports the low percentage in the present study[11]. In the present study, (51.5%) young adults were aware that it was possible to reimplant the avulsed tooth. It coincides with the findings of studies by Goswami M (2017)[6] and Lang Bet al (2002)[12] However another study showed that only 34.7% of individuals were aware about reimplantation of teeth[13] The tooth rescue kit represents an important link in the rescue chain geared toward heightening the success rate of replantation after avulsion by supporting the regeneration of cemento blasts[14]. The tooth rescue kit contains amino acids, glucose and vitamins and is available for purchase. It should be provided at public sports facilities in order to improve the prognosis of avulsed teeth.[15]

Most of the participants (62%) in this study were unaware about the time duration in which the avulsed teeth could be reimplanted. Other studies have shown this percentage being 45.1% in a study by Goswami M[6] and 31.6% in a study by Ersin N et al[13] About 45% of the students who participated in the present study considered avulsed tooth being wrapped in a cloth be the best suited medium for storage and transportation while only 11% opted for HBSS as the best storage medium. Another study showed water (49.6%) as the best storage medium.[6] In other studies only 8.3% knew that avulsed teeth should be carried in liquid medium (milk, water, saliva).[13,16] This result is not very fulfilling since the lack of knowledge about the storage medium could lead to irreversible damage to the PDL cells and the tooth would not be able to get reimplanted in the oral cavity. The patient would then have to bear the high subsequent cost of alternative treatments.

Acknowledging the old proverb that says Prevention is better than cure one of the effective ways to prevent oral injuries while performing sports and exercise activities is by using mouthguards[17] Mouthguards are protective devices that distribute and dissipate transmitted forces on impact. They separate the cheeks and lips from the teeth, making users less susceptible to soft-tissue laceration and preventing opposing arches from traumatic contact[1] Regarding the awareness of mouthguard in preventing dental injuries,

91% of the students in the present study were aware of its usefulness. However, only 27% of the participants were utilising it. Various studies in the past have shown that although the participants were well aware of importance of mouthguards, very few were actually using them.[18,19,20,21]
According to a study by Goswami M[6] most common reason why athletes (48.6%) did not wear mouthguards was that their coaches did not urge them to wear However it is contrary to the present study. In our study not even a single student mentioned that coach did not guide them to wear mouthguards. The present study revealed that the fear of discomfort (51.3%) was the main reason for not using mouthguards. Resistance for wearing of mouthguard might be due to discomfort like interference with breathing and speech, and the effect on the players' image[22] In order to overcome the discomfort issue players can be advised to use custom -made mouthguards which offer greater comfort, fit and protection against such injuries. Cost was not the factor in not wearing mouthguards in a study by Goswami M[6] however it was the second most common (27.3 %) reason for not using mouthguards in the present study. These findings support that knowledge alone on mouthguard use does not ensure its utilization. A joint effort is required amongst sports authorities, parents and dental professionals to increase the awareness and promote the use of mouthguards among athletes, coaches and children participating in contact as well as non-contact sports.

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