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"TOOTH TACKLE: Awareness among Students of Health Sciences University Regarding Sports Related Dental Injuries"

Aniket Sanjay Nandudkar[1], Dr. Shivakumar K.M[2]

[1,] BDS, Department of Public Health Dentistry, School of Dental Sciences, Krishna Vishwa Vidyapeeth Deemed to be University, Karad, Maharashtra, India.
[2]Professor and Head of Department, Department of Public Health Dentistry, School of Dental Sciences, Krishna Vishwa Vidyapeeth Deemed to be University, Karad, Maharashtra, India.

ABSTRACT

Background: Sports dentistry is an emerging yet underrepresented field within dental education, despite its critical role in preventing, diagnosing, and managing orofacial injuries in athletes. Dental trauma during sports—ranging from tooth fractures to avulsions—is common, yet awareness and preparedness among future healthcare professionals remain insufficiently explored. To assess the current level of awareness, knowledge, and attitudes toward sports-related dental injuries among students of Health Sciences University and to evaluate the presence and effectiveness of sports dentistry education in their curriculum.

Methods: A cross-sectional study will be conducted among undergraduate students at Health Sciences University to assess students' self-perceived preparedness in sports dentistry. Data collection and analysis will occur over two months, followed by reporting.

Result: The study found that dental students, KIMS, and KCPT students had higher awareness of sports-related dental injuries, preventive aids, and relevant dental departments. However, KIP, KINS, and KIST students had lower knowledge, particularly regarding psychosomatic and environmental factors. The findings suggest uneven awareness and the need for improved interdisciplinary education.

Conclusion: The study reveals significant disparities in awareness of sports dentistry among health science students. Enhanced interdisciplinary education and curriculum integration are essential to equip future professionals with the knowledge needed to prevent and manage sports-related dental injuries effectively.

Keywords: Sports dentistry, dental trauma, awareness, orofacial injuries.

INTRODUCTION

Sports and physical activity play a vital role in promoting general health and well-being. However, athletic participation also exposes individuals to a significant risk of injuries, including those involving the orofacial region. Dental trauma during sports—such as tooth fractures, avulsions, and soft tissue injuries—is common and can lead to long-term functional and psychological consequences if not managed promptly and appropriately.

Sports dentistry is a specialized domain concerned with the prevention, diagnosis, and treatment of dental injuries resulting from athletic activities. Athletes, physical education instructors, and students in sports science have poor attitudes and knowledge regarding mouthguards. Since these persons who are interested in sports have a significant exposure to severe dental injuries, education should be given to raise their awareness about mouthguards [1]. Mouthguards (MGs) are crucial equipment for preventing orofacial injuries sustained during sports [2].

Despite its relevance, it remains largely underrepresented in most undergraduate health sciences education, particularly among dental students. Athletes often require care tailored to the unique dental risks posed by specific sports, making it essential for budding healthcare professionals to acquire foundational competence in this field. The combined frequency of dental and orofacial injuries was 40.6%, whereas the prevalence of dental injuries was 15.9% and the orofacial injury was 17.1% [3].

Existing evidence suggests a lack of sufficient awareness and preparedness among future healthcare providers regarding the management of sports-related dental trauma [4]. Since early intervention plays a pivotal role in limiting damage and improving clinical outcomes, the knowledge and proficiency of students in handling such cases become critical.

This research study aims to evaluate the awareness, attitudes, and preparedness of students of Health Sciences University in managing sports-related dental injuries. Sports-related maxillofacial trauma should be a greater concern for oral and maxillofacial surgeons given the rising number of sports-related injuries [5]. By concentrating its study on the student at the formative end of their dentistry training, this research stresses the importance of being aware of their views and readiness of managing a case which may come to them in their clinical practice. The outcomes of this study will support the identification of educational gaps and help inform recommendations to better equip students for real-world scenarios involving dental trauma in sports contexts.

MATERIALS AND METHODS

This study was designed as a cross-sectional descriptive questionnaire-based survey conducted over a duration of six months at Krishna Vishwa Vidyapeeth Deemed to be University, Karad, Maharashtra aimed at evaluating awareness and knowledge regarding sports-related dental injuries among undergraduate students. The population for this study included undergraduate students enrolled in courses under health sciences disciplines including SDS(Dentistry), KIMS(MBBS), KCPT(Physiotherapy), KIP(Pharmacy), KINS(Nursing), and KIST(Allied Health Sciences). These students represent the future clinical workforce likely to encounter sports-related dental injuries. The sample size was calculated based on standard formulae for cross-sectional studies, accounting for an additional 20–30% to mitigate non-responses. Participants were selected using a systematic random sampling technique to ensure representativeness across academic years.

A self-administered structured questionnaire was the primary data collection tool. This instrument was developed through literature review and adapted from validated surveys used in similar studies. It comprised four sections: socio-demographic data, knowledge and awareness regarding common dental injuries in sports (e.g., avulsions, fractures, soft-tissue trauma), attitudes toward sports dentistry, and evaluation of educational exposure to the subject. The questionnaire was validated for face and content validity by a panel of experts in public health dentistry and sports medicine.

After obtaining ethical clearance from the Institutional Ethics Committee, participants were briefed about the study purpose and gave written informed consent. Participation was voluntary, and students could withdraw at any time without penalty. A structured, self-administered questionnaire was developed using Google Forms and circulated digitally via institutional email groups, WhatsApp academic circles, and student coordinators. The questionnaire was designed after a thorough review of the literature and consultation with subject experts in Public Health Dentistry and Sports Medicine to ensure content validity. The final questionnaire administered to participants comprised 20 close-ended questions strategically developed to assess multiple dimensions of knowledge and awareness related to sports dentistry. These questions were carefully structured to evaluate the general awareness of students regarding the emerging field of sports dentistry, specifically focusing on its relevance in preventing and managing dental injuries in athletic contexts.

Additionally, the questionnaire aimed to gauge students' ability to recognize various types of dentofacial trauma commonly encountered during sports activities, such as tooth fractures, avulsions, and soft tissue injuries. Another critical aspect addressed was the understanding of preventive measures, including the use of protective aids such as mouthguards, helmets, faceguards, and chin cups, which play a significant role in mitigating the risk of sports-related oral injuries. The instrument also explored students' knowledge about specific sports that are commonly associated with a higher incidence of dentofacial injuries, assessing whether participants could correctly identify high-risk sports such as boxing, football, hockey, and martial arts. Furthermore, the questionnaire examined the extent to which students were aware of the various dental specialties and healthcare professionals responsible for the treatment and management of such injuries, thereby highlighting their understanding of interdisciplinary roles in trauma care. This comprehensive approach allowed for an in-depth evaluation of students' theoretical and applied knowledge across the continuum of sports dentistry.

Each question had a single correct answer. The responses were recorded automatically via Google Forms, and only fully completed forms were included in the final analysis.

Data collection was conducted during pre-scheduled academic sessions under researcher supervision. Completed questionnaires were immediately checked for completeness and anonymously coded to ensure confidentiality. Data entry was executed using Microsoft Excel, with double entry for accuracy, and statistical analysis was performed using SPSS version 26.0. Descriptive statistics (mean, standard deviation, frequencies) were used to summarize data,

while inferential analyses (Chi-square tests, t-tests, and ANOVA) were applied to determine associations between variables, with statistical significance set at $p < 0.05$.

Throughout the study, no experimental procedures or compensation were involved, and participants bore no financial cost. The findings aimed to fill critical knowledge gaps regarding sports dentistry among health sciences students and inform future educational strategies.

RESULTS

Table I. Dichotomous Questions

Sr. No.	Questions	Faculty					
		SDS	KIMS	KCPT	KINS	KIP	KIST
1.	Do you think sports and dentistry are related to each other? [Answer: Yes]	**54 (95%)**	**77 (92%)**	**73 (90%)**	**69 (87%)**	**68 (82%)**	**65 (78%)**
1.	Have you ever seen dentofacial injuries caused while playing? **[Answer: Yes**	**60(68%)**	**53 (64%)**	**43 (53%)**	**34 (43%)**	**60 (73%)**	**64 (77%)**
2.	Do you think stress and anxiety during sports can cause dental injuries?	**83 (93%)**	**65 (78%)**	**51 (63%)**	**54 (68%)**	**65 (42%)**	**57 (33%)**
3.	Do you think energy drinks used by a sports person can cause dental problems?	**85 (96%)**	**73 (87%)**	**61 (75%)**	**56 (70%)**	**54 (65%)**	**50 (60%)**
4.	Do energy bars used by players to boost energy increases risk of dental caries?	**86 (97%)**	**71 (85%)**	**57 (70%)**	**56 (70%)**	**54 (65%)**	**42 (51%)**
5.	Does chlorinated water that swimmers swim in cause dental issues in oral cavity of swimmers?	**75 (85%)**	**45 (54%)**	**32 (40%)**	**30 (38%)**	**32 (39%)**	**16 (19%)**
6.	Are faceguards and chin cups useful in preventing dentofacial injuries?	**72 (82%)**	**63 (76%)**	**57 (70%)**	**48 (60%)**	**45 (54%)**	**47 (57%)**

SDS (School of Dental Sciences), KIMS (Krishna Institute of Medical Sciences), KCPT (Krishna College of Physiotherapy), KINS (Krishna Institute of Nursing Sciences), KIP (Krishna Institute of Pharmacy), KIST (Krishna Institute of Science and Technology)

Table I showed that departments were generally well-informed on the connection between dentistry and sports. The highest awareness was shown by students from SDS (95%), who were closely followed by KIMS (92%) and KCPT (90%) students. This implies that these curricula provide a comparatively greater exposure to dentistry and trauma-related instruction. In contrast, students from KIP (82%) and KIST (78%) had significantly lesser awareness, suggesting possible areas for educational outreach. It's interesting to see that most students in all departments had experienced dentofacial injuries when participating in sports, with KIST students recognising this the most (77%) and KIP students recognising it the most (73%). This is probably due to observational exposure rather than academic learning. Departments differed greatly in their comprehension of how stress and anxiety during sports could result in tooth injury.

While KIP (42%) and KIST (33%) reported the lowest recognition, indicating an undervaluation of psychosomatic factors, dental students once again scored best (93%), indicating a holistic comprehension of injury aetiology. Athletes' frequent use of energy and sports beverages is concerning because it negatively affects their oral health [6]. Strong preventative awareness was also demonstrated by the high correct response rates to questions about the detrimental oral effects of energy drinks and bars, particularly among dental students (96%, 97%) and KIMS students (87%, 85%). Contrariwise, only 19% of non-dental students in the KIST and 38–40% in KINS recognised the dangers of chlorinated water, indicating a need for more interdisciplinary instruction in environmental oral health and sports. Awareness about the utility of protective aids like faceguards and chin cups was highest among SDS students (82%), but responses from KINS (60%) and KIP (54%) indicated significant knowledge gaps in injury prevention strategies.

Table II. SPORTS RELATED QUESTIONS

Sr. No.	Questions	Faculty					
		SDS	KIMS	KCPT	KINS	KIP	KIST
1.	Which type of sports you think are related to dentistry?	**(83%)**	**(84%)**	**(78%)**	**(83%)**	**(88%)**	**(80%)**
1.	Which games can cause dentofacial injuries?	**(98%)**	**(95%)**	**(96%)**	**(93%)**	**(95%)**	**(96%)**
2.	In which sports mouthguards are used to prevent injuries?	**(87%)**	**(73%)**	**(92%)**	**(70%)**	**(68%)**	**(70%)**
3.	Helmets are used in which sports to prevent injuries?	**(96%)**	**(94%)**	**(98%)**	**(96%)**	**(95%)**	**(97%)**

Certain ball and cycling-related sports may be more dangerous for maxillofacial injuries [7]. Table II shows that upon inquiry regarding the sports associated with dental injury risk, most respondents from all departments exhibited a robust comprehension, with KIP students at the forefront at 88% and KIST at the lowest at 80%. Although there is variability, this demonstrates generally high awareness. Similar to this, a large majority of students (varying from 93% to 98%) correctly identified the sports that are most likely to result in dentofacial injuries, demonstrating a solid general understanding of high-risk activities. KCPT students were the most likely to recognise the use of mouthguards in injury prevention (92%), which is consistent with their likely exposure to athlete care. SDS students came in second (87%). In contrast, KIP (68%) and KIST (70%) showed lower awareness, suggesting a knowledge gap regarding practical preventive tools. Helmet use was well understood across all departments (94–98%), reflecting general public safety awareness, likely reinforced through broader public health messaging and sports engagement. Lip abrasions and crown tooth fractures are the most frequent injuries among para-athletes [8].

Table III. COMMON INJURIES

Sr. No.	Questions	Faculty					
		SDS	KIMS	KCPT	KINS	KIP	KIST
1.	Which dentofacial injuries are most common in contact sports like basketball, football?	**84 (95%)**	**80 (96%)**	**78 (95%)**	**74 (93%)**	**68 (82%)**	**65 (79%)**
1.	Which dentofacial injuries are seen in boxing, martial arts, karate like sports?	**79 (89%)**	**82 (98%)**	**77 (94%)**	**73 (92%)**	**70 (84%)**	**69 (83%)**
2.	Which dentofacial injuries are commonly seen in sports like Cricket, Baseball, Hockey?	**71 (80%)**	**63 (76%)**	**63 (77%)**	**52 (65%)**	**56 (68%)**	**60 (73%)**
3.	Which dentofacial injuries are common in sports like skating, skateboard, cycling, off-road biking?	**74 (84%)**	**63 (76%)**	**65 (79%)**	**56 (70%)**	**52 (63%)**	**56 (68%)**
4.	Which among the following dentofacial injury is most likely to occur due to sports or while playing?	**69 (78%)**	**50 (60%)**	**59 (72%)**	**43 (54%)**	**47 (56%)**	**33 (40%)**
5.	Which part of face is more prone to injuries?	**82 (92%)**	**73 (88%)**	**70 (86%)**	**56 (70%)**	**61 (74%)**	**58 (71%)**

Table III shows that students from SDS and KIMS exhibited a uniform and precise comprehension of prevalent injuries across diverse sports categories. For instance, compared to 79% of students in the KIST, 95% of SDS and KIMS students recognised frequent injuries in contact sports like football and basketball. Particularly among KIMS (98%) and KINS (92%) students, boxing and martial arts-related injuries were well-known, perhaps as a result of their trauma management education. In contrast to contact sports, recognition of injuries associated with baseball, hockey, and cricket was moderate across all groups, with correct answers ranging from 65% to 80%. Similarly, awareness of high-speed sports such as off-road riding and skating was slightly lower (63% to 84%), indicating that training modules may not adequately include these less frequently regulated sports. It's interesting to note that answers to the question about the most common dentofacial injury brought on by sports varied greatly. Students from SDS once again scored the highest (78%), while KIST students got the lowest (40%), highlighting their educational disparity. SDS students (92%), KIMS students (88%), and KCPT students (86%), outperformed KINS and KIP students (70–74%) in determining which facial part is most likely to sustain an injury. This demonstrates how clinical programs that provide direct exposure to trauma care and orofacial anatomy (such as those in dentistry and medicine) help students grasp impact zones better.

Table IV. Professionals involved

Sr. No.	Questions	Faculty					
		SDS	KIMS	KCPT	KINS	KIP	KIST
1.	Which medical professionals can help treat dentofacial injuries?	**87 (98%)**	**67 (80%)**	**61 (75%)**	**51 (64%)**	**55 (67%)**	**59 (72%)**
1.	Which dental departments are more related to treating dentofacial injuries caused due to sports?	**88 (99%)**	**43 (52%)**	**39 (48%)**	**25 (32%)**	**25 (30%)**	**31 (37%)**

Table IV shows that students from SDS (98%) strongly agreed that treating dentofacial injuries requires the involvement of several healthcare providers. However, only 64% of KINS and 67% of KIP students were aware of this information, indicating a dramatic fall in awareness in other departments. This points to a fragmented knowledge of trauma care outside of dentistry school. Nearly all SDS students (99%) correctly identified the dental departments that explicitly deal with these injuries, while expertise in other departments was noticeably lacking, especially in KINS (32%) and KIP (30%). These findings demonstrate the dearth of multidisciplinary knowledge on the specific dental treatment required for trauma therapy.

It is crucial to prevent sports-related face damage in order to prevent the severe and permanent effects that such injuries may have [9]. Despite the low frequency of head trauma, it is impossible to overstate the importance of wearing protective gear because severe harm is irreversible [10].

Table V. VARIOUS AIDS

Sr. No.	Questions	Faculty					
		SDS	KIMS	KCPT	KINS	KIP	KIST
1.	What aids can be used to prevent dentofacial injuries?	**87 (98%)**	**79 (95%)**	**78 (96%)**	**72 (90%)**	**58 (70%)**	**60 (73%)**

Table V shows that clinical departments were well-versed in the various preventative measures for dentofacial injuries. Students from SDS (98%), KCPT (96%), and KIMS (95%) indicated extensive knowledge of preventative devices, most likely as a result of clinical experience and theoretical understanding. In contrast, students from KIP (70%) and KIST (73%) had lower levels of awareness, indicating the need to incorporate basic dental trauma prevention education into their curriculums. These responses bolster the case for interdisciplinary training modules that address prevention strategies in athletic settings. It is anticipated that increased mouthguard use will lower dentofacial injuries in hockey [11].

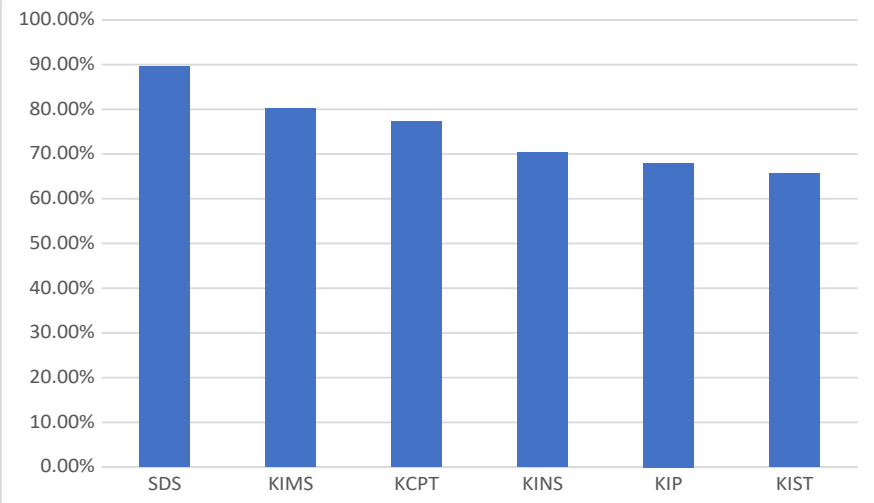

Figure I. Comparison between various Faculties of Health Sciences University regarding awareness of Sports related Dental injuries

Figure I. shows comparison between the various faculties of Health Sciences University for aggregate percentage of correct responses. Each of the six faculties had a different overall percentage of right answers. The highest performance was seen in the SDS faculty (89.60%), followed by KIMS (80.10%) and KCPT (77.30%). KIST had the lowest overall percentage (65.70%), while KINS (70.40%) and KIP (68%) performed moderately. The difference between the greatest (SDS) and lowest (KIST) performing faculties was 23.9 percentage points, suggesting heterogeneity in knowledge levels between faculties.

DISCUSSION

The study aimed to evaluate the awareness, attitudes, and educational preparedness of undergraduate students across various health science disciplines regarding sports-related dentofacial injuries. High-impact, high-speed sports were more likely to cause face bone fractures, while low-impact, low-speed sports were more likely to cause oral injuries [12]. It found a significant disparity in knowledge across academic departments, with dental students having superior awareness and preparedness compared to their peers in allied health sciences. Dental students had a higher percentage of students from SDS (95%) acknowledging the relationship between sports and dentistry, while students from KIMS (92%) and KCPT (90%) showed moderate exposure to trauma-related healthcare. However, students from KIP (82%) and KIST (78%) exhibited lower awareness, indicating a gap in curriculum integration of sports-related oral health content. MGs are good with preventing orofacial injuries and may improve performance, especially if they are custom-made [13]. Contact sports carry the highest risk of dental trauma, with over 90% of respondents correctly identifying risky sports like boxing, football, and martial arts.

Pharmacy students demonstrated the highest recognition (88%) of the types of sports linked to dental risks. Students from clinical departments showed encouraging levels of understanding regarding protective measures, particularly helmets and mouthguards. However, students from KIP (68%) and KIST (70%) underperformed in this domain, underscoring the need for more experiential learning or visual reinforcement through real-life case studies. The study also highlighted the limited recognition of dental specialties involved in trauma care among non-dental departments. While 99% of dental students correctly identified the departments involved in sports injury management, only 30-52% of students in other disciplines were aware of these roles. Sports dentists should support changes to regulations, including requiring mouthguard wear, in popular sports like basketball and soccer/futsal where HICBT is common [14].

CONCLUSION

The study reveals significant disparities in understanding sports-related dentofacial injuries among students from various health science disciplines. Dental, MBBS, and physiotherapy students showed high knowledge, while nursing, pharmacy, and allied sciences students showed gaps in understanding injury causation, preventive strategies, and dental specialties involved in trauma care. The study emphasizes the need for a more inclusive and interdisciplinary approach to sports dentistry education. Despite the increasing incidence of dental injuries in athletic settings and the growing emphasis on preventive health, sports dentistry is not adequately represented in non-dental health programs. Students from KIP and KIST need to be better equipped with foundational knowledge to recognize, refer, and manage dental trauma. Factors such as stress, dietary habits, and environmental exposures are also underappreciated. The study advocates for integrating sports dentistry modules into the broader health sciences education system to promote collaborative, multidisciplinary care and improve health outcomes for athletes.

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