



ASSESSMENT OF KNOWLEDGE AND AWARENESS OF DENTAL INJURIES AMONG THE COACHES AND SPORTS-PERSONS OF DIVERSE SPORTS IN CHENNAI – A CROSS SECTIONAL SURVEY

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Abstract

Background: Recreational and competitive sports activities are necessary for both physical and psychological well-being. Increasing incidence of traumatic dental injuries(TDI) is majorly contributed by sports specific dental injuries among children and young adults who participate in sports. This risk can be reduced by using oro-facial protective aids. The objective of this study was to evaluate the knowledge and awareness of dental injuries among the coaches and sportspersons of various sports regarding sports-based dental injuries in Chennai, Tamil Nadu.

Materials and methods: Two separate questionnaires on knowledge and awareness about sports-based dental injuries, comprising of 11 items each was developed. This cross-sectional study was conducted among 42 coaches and 223 sportspersons. Every individual who consented to participate was given 10-15 minutes to complete the questionnaire before submission. Later, were educated on dental emergencies and its management with an emphasis on mouthguards. The obtained data was subjected to statistical evaluation using chi square test.

Results: There were 42 coaches and 223 sportspersons assessed in the current study with a male to female ratio of 5:1 and 1.47:1 respectively. The mean years of experience was 10.5 years for the coaches in their respective fields. The overall knowledge and awareness were 53.2% and 80% for the coaches and 43% and 61% for the sportspersons respectively.

Conclusion: Study participant's knowledge was suboptimal and awareness was optimal. Study results revealed that although majority of the coaches were unaware of management of dental injuries, they had instructed their students about the benefits of using protective gears to reduce the risk of TDI.

Keywords: Traumatic dental injuries, sports, coach, Sportspersons, dental emergency.

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1. Introduction

Practice of physical/sports activities promotes competence in youth and therefore provides a series of health benefits and risks. Teaching and practicing of athletic skills without life skills will eventually increase the chances of risk than benefit (1) A sports-coach spends indefinite time and energy on his students and will be in direct contact throughout the training period and promptly motivates to be in consistent practice, pushing towards excellence. Nevertheless, these activities can eventually ascribe the practitioners to be exposed to risk of orofacial traumas.(2)

Several etiological factors account to dental trauma such as fall and road traffic accidents whilst greater occurrence of orofacial injury is most often predestined in individuals involved in sport-activities. (3-6). Traumatic dental injuries (TDI) are the fourth most common injuries among 7-30-year-old age group (7,8) Various studies reported a prevalence of TDI ranging between 11.5 and 22.3% and 10 – 36% were sport-related dental injuries with over 48% involving maxillary teeth.³ (5,9-16)

Dental injuries can affect both soft and hard tissues to varying degrees that can cause injury to gingiva, mucosa and perioral structures furthermore chipping of the tooth or even fracture of the jaw respectively. As a result, it affects the function and aesthetics. (16) Risk of trauma can be minimized or avoided by wearing protective devices. (17) Safety of an athlete is best achieved with the help of personal protective devices like mouthguard, face guard, nose protector, eye shield, shoulder pads, rib protector, gloves, elbow guard, knee pads, ankle guard and other protective gears, etc.

Sagacious utilization of these devices reduces the probability of oral trauma, concussions, cerebral haemorrhage, loss of consciousness, and even death. (18) Knowledge and awareness of protective devices do have an impact on its application. The dearth of information on this regard, chiefly in Chennai, TamilNadu, India, has led to the conduct of this study. Hence, the aim of this study was to evaluate the knowledge and awareness of the dental injuries among the coaches and sportspersons who practiced diverse sports activities within Chennai city.

2. Materials And Methods

Study design:

The current cross-sectional survey-based study was outlined using the Checklist for Reporting of Survey Studies (CROSS). (19) As per the Institutional Ethical Committee Norms, this study

fall under the category of less than minimal risk. Hence, ethical approval was not required.

Study Setting:

Pre-validated questions were collected from previous study(20) and few edited questions were validated by test and retest method by three experts within the department of Pediatric and preventive dentistry. Two separate questionnaire type proforma comprising of 11 questions each was developed to assess the knowledge and awareness on sports-base dental injuries among coach and sportsperson, consisting of two sections. The first section included demographic details, years of experience. Second section included open ended and multiple choice/close ended questions that aimed to evaluate knowledge and awareness of dental injuries in various sport-activities. This self-administered questionnaire was distributed to the coach and sportsperson in person by an investigator (hand-to-hand) and was explained in their language of understanding (Tamil/English) in case of any difficulty. Everyone was given 10 to 15 minutes to complete the questionnaire and a total of 42 responses from coaches and 223 responses from sportspersons were collected. No prior study material was provided.

After the questionnaires were collected, children were educated about the possible chances of dental injuries that are likely to happen during sports activities and the management for the same. A brief note was added on the usage, advantages and availability of orofacial protective aids with special mention on customized mouthguards and its significance.

Study population:

Inclusion criteria:

For coach – With experience more than 5 years

For sportspersons – Aged between 6 and 16 years

Exclusion criteria:

Individuals who did not consent to participate in the study.

Subjects were taken from Chennai Mixed Martial Arts (MMA) academy, Dynamic MMA academy, MM Boxing academy, Xtreme Fitness and Fight Club, Nehru stadium – Boxing, handball and hockey classes, STR Boxing club and ICF Villivakkam – Basketball class.

Study Size:

Using G Power software, it was computed that at least 35 participants would be needed to reach more than 90% power for an effect size 0.5 ($\alpha = 0.10$). Participation was voluntary and it was compulsory to answer all the questions. An informed consent was obtained as they accepted to participate in the study.

Statistical Methods:

Data were tabulated in Microsoft Excel sheet 2016 and was subjected to statistical evaluation using SPSS version (Statistical Package for The Social Sciences, version 25) for analysis. Descriptive statistics and chi-square test were used to analyse the statistical differences in response.

3. Results

Coach:

Results and tabulated in table 1 and 2.

A total of 42 coaches participated in the study and the mean age of the coaches was 36.14 (8.77) years and male instructors contributed to 83.3% of the total respondents with a corresponding male to female ratio of 5:1. The mean years of experience was 10.5 years. The participants were from diverse sports activities most of which trained skating and boxing. Significant number of participants did not receive any training for dental emergencies (p value 0.005). Most of the participants were not aware of the best time to put the tooth back in socket (33%, p value 0.02). 36% of the participants responded that dental trauma emergency management should be taught to coaches ($p<0.00001$) and 30% of the participants needed further information on this regard ($p=0.005$).

Considering the risks involved in these sports, usage of protective gears will have a better impact in avoiding traumatic dental injuries especially in contact sports. Though the need for awareness was high, only a less than one third had received training for dental emergencies whereas two third of the participants had received general first aid training. Among 38.1% of the coaches who had witnessed dental injuries while playing, 62% had approached the dentist for further management. In case of avulsion, most of them opted to seek the dentist (33.3%) or reimplant (28.6%) while few chose to dispose the avulsed tooth (14.3%) and the remaining did not know how to manage. If the tooth was reimplanted, immediate reimplantation was opted by 28.6% of the participants and 62% considered that treatment was required for an avulsed tooth.

90% of the study subjects agreed that TDI during practice and matches were coach's responsibility to prevent and 85.7% agreed to be taught on TDI emergency management. With respect to oro-facial protective devices, most widely used device was mouthguard and 90.4% of the coaches agreed to mandate its use during the game. About 71.4% of the individuals were interested in further education on prevention of dental injuries and its consequences to improve their knowledge on the same. Therefore, the overall knowledge and

awareness about sports-based dental injury was 53.2% and 80% respectively. (Graph 1)

Sportsperson:

Results and tabulated in table 1 and 3.

A total of 223 children practicing sports had participated in the study with a mean age of 13 years. Majority of the athletes were males (59.6%) with a male to female ration of 1.47:1. Most of the study population had practiced outdoor games (47.5%) and a combination of both indoor and outdoor games (12.1%) with amateurs(63.2%) being the higher number evaluating themselves to be at a high risk (52%) sport activity. Among the children assessed, individuals who experienced dental trauma(24.6%) was comparatively lesser and most of it were soft tissue lacerations(69%) and the least was avulsion of tooth(1.8%) and 83.6% of them had underwent treatment for the same.

Out of the study participants evaluated, 39.9% of them were only aware of the possible dental injuries and most of the individuals did not know(63.2%) how to manage an avulsed tooth. When question was posed about mouthguards, almost 76.2% of the subjects were aware and had perceived the information from coaches/teachers(66.4%). More than half the population were used to wearing mouthguards either sometimes(36.3%) or always(32.3%) and other protective aids were also used either alone or in combinations. About 65% of the athletes were interested and acknowledged the need to improve their knowledge on sports-related dental trauma, its prevention and management. Therefore, the overall knowledge and awareness about sports-based dental injury was 43% and 61% respectively. (Graph 1)

4. Discussion

Coaches are at the helm of training athletes in their respective sports, to analyze, instruct, encourage and to bring out the latent potential of the students. Hence, it is the utmost responsibility of the coaches to be aware about the injuries related to the sports and their management. Students, on the other hand, shows an overwhelming interest in sports as it boosts their competitive spirit and develops a disciplined routine in their physical activity which poses them to be at a higher risk of traumatic injuries during sports. Therefore, the present study aimed at assessing the knowledge and awareness on sports-based dental injuries among the coaches and the sportspersons in Chennai of diverse sports fields.

A large amount of time was spent with sportsmen during practice sessions giving more opportunity for interaction and influence. Therefore, it is necessary for the coaches to be

aware of the significance of protective aids. In the current study, majority of the participants were male physical instructors similar to the reports of Neeraja G *et al* and Bhadana *et al.*(20,21) Relatively a higher number of coaches who consented to participate in the study trained for skating, boxing and football followed by other activities which were a combination of contact and non-contact sports. Contact sport like boxing is the major contributing factor for orofacial injuries. (19,20) Among the current study population about 66.7% and 28.6% of them had received training on general first aid management and for dental emergencies respectively which was lesser than the study conducted by Bhadana *et al*(21) who reported 88% and 55% of professional training in both aspects and the study by Mohandas *et al* which reported 90% of formal first-aid training.(16)

A total of 38.1% of coaches and 24.2% of sportspersons had witnessed TDI, most commonly occurring was soft tissue lacerations, tooth fracture requiring full coronal restoration and luxation injuries.(22) Likewise, Mohandas *et al*(16) reported 39% that corroborated with the present study results. Although most of the coaches who had witnessed TDI approached the dentist for appropriate treatment, some had opted to reimplant or dispose. But, 28% of the coaches did not know how to manage in case of avulsion. On that account, the first person in contact with the sportsperson during the time of injury will be the coach/trainer who play an important role in emergency management for the same. It has been reported that, following the increased prevalence of dental caries that affects most of the world population, avulsion of permanent teeth is one amongst the serious dental injuries which accounts to 0.5% to 16% of all injuries and whose prognosis relies on the action taken swiftly.(21,23,24) There exist a primary requisite and paramount necessity for the coaches to be aware of immediate management of avulsion.

In the present study, coaches were questioned about the best time to reimplant the avulsed tooth, wherein only 28.6% of the participants opted for immediate reimplantation and 27% of the sportspersons had opted for reimplantation following avulsion. Almost 67% of the coaches chose to reimplant when they encounter with avulsion. Similarly, Mridula Goswami *et al*(25) found that 58.4% of the individuals chose to reimplant and Mohandas U *et al*(16) reported that 49.6% sought for professional help. This reflects an appreciable act towards avulsive management. In contrast, Bhadana S *et al*(21) and Geetika Gupta *et al*(26) gave an account that 17.1% and 28% of the respondents chose to re-implant respectively. This difference shows their

perspective in management based on their previously acquired knowledge and our study results depicts that there was higher degree of willingness to reimplant even though the best time for reimplantation was not known.

Majority of the study participants were aware that the avulsed tooth will require further management and also 90% of the coaches agreed that it is responsibility of the coaches for the TDI that occurs on the field during the practice sessions or the matches. It was in contrast with the results of Bhadana *et al*(21). When question was asked if dental trauma management should be taught to the coaches, 85.7% felt the need to be educated as a part of their curriculum wherefore only 50% had agreed in the study by Bhadana *et al*(21).

During sports-related activities, there are high chances of inadvertent accidents to happen. About 24% of the sportspersons had experienced dental trauma during their sport activity whereas 63.4% of incidence was reported by Kamalesh *et al.*(27) Though accidents cannot be avoided, the impact of dental trauma can be minimized to a greater extent with the help of personal protective aids like helmet, mouthguard, face shield, etc. Such protective gears during sports reduces the incidence of injuries that are likely to occur.(28,29) To the surprise, when a question was posed on mouthguard, 90.4% coaches insisted that mouthguards are compulsory during the sports activities whereas only 20.4% agreed to this in the study conducted by Bhadana S *et al*.(21) 76.2% of the sportspersons were aware of the mouthguards and its significance and the information was majorly imparted from their coaches. In contrast, Neeraja *et al* also observed that majority of the physical instructors did not recommend mouth guards to their students.(20)

It was perceived that 71.4% of the coaches and 65% of the sportspersons understood the importance and were eager to obtain further education regarding the dental injuries and its management that can potentially expand their knowledge and awareness. Sathyaprasad *et al*(30), Neeraja *et al* (20) and Bhadana *et al*(21) also reported 80%, 70%, 61.5% respectively which corroborates with the present study results.

After the filled questionnaires were collected, coaches were provided with a prepared handout on TDI management, whose information were extracted from Internatioanl Association for Dental Traumatology (IADT) guidelines(31) with ‘Save a Tooth’ poster printed in English and Tamil along with the positive attributes of using protective gears like mouthguard along with their types and availability.(32) It is an action plan in the form of an educational program undertaken to increase the knowledge and awareness on dental

injuries and to bridge the gap between the dentist and the coach as well as the sportsperson or an athlete. American Association of Pediatric Dentistry (AAPD) encourages the coaches to consult a dentist with expertise in dental injuries before starting the practice sessions as it guides towards prompt management of TDI.(32)

When the Implementation of preventive measure can significantly reduce the prevalence of dental caries, incorporation of personal protective gears can also reduce the prevalence of TDI.(33) Therefore, it was evident from the current study that, though the knowledge on dental injuries among the coaches and sportspersons in Chennai city was deficit, interest to pry out was prodigious. However, generalization of the result is less reliable as it is a cross-sectional study design with limited study population. Future direction should aim at including more number of participants from various sectors to assess the awareness.

5. Conclusion

Appreciable passion for learning did not comprehend to the opportunities available to expand the knowledge. General first aid training programs outnumbers those on dental injuries which sabotages the significance of itself and delineates insufficient learning platforms for the coaches who creates the future of millions of champions. Nevertheless, most of the coaches insisted on using protective gears like mouthguard usage in the student's day-to-day practice. Therefore, it is the utmost responsibility of the local government body and the dentists to work in collaboration and improve the knowledge and awareness of dental injuries during sports and for the betterment of the budding icons of future.

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Conflict of interest

The authors confirm that there was no conflict of interest.

Ethical Approval

No ethical approval was required for this paper.

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Results

Table 1: Demographics and Type of sport trained/practiced by coach and sportspersons:

Variable	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)
	Coach		Sportspersons	
Gender				
Male	35	83.3	133	59.6
Female	7	16.7	90	40.4
Which sport do you train/practice				
Basketball	2	4.8	31	13.9
Boxing	8	19	67	30
Football	6	14.3	4	1.8
Handball	2	4.8	39	17.5
Hockey	0	0	12	5.4
Judo	2	4.8	0	0
Kabbadi	2	4.8	0	0
Kayaking	2	4.8	0	0
Kick boxing	4	9.5	13	5.8
MMA	4	9.5	24	10.8
Skating	10	23.8	17	7.6
Mallakhamb	0	0	1	0.4
Swimming	0	0	1	0.4
Volleyball	0	0	14	6.3

Table 2: Knowledge and awareness of sports-based dental injuries among coaches:

	Variable	Frequency (n)	Percent (%)	P value
1. Have you received first aid training in general?	Yes	28	66.7	0.03075
	No	14	33.3	
2. Have you received training for dental emergencies on the field?	Yes	12	28.6	0.00548*
	No	30	71.4	
3. Have you witnessed a traumatic dental injury?	Yes	16	38.1	0.12282
	No	26	61.9	
4. If yes, have you approached a dentist on witnessing dental injury?	Yes	10	62	0.31731
	No	6	38	
5. If yes, what did you do ?	Dispose	6	14.3	0.34303
	Replace in socket	12	28.6	
	Seek the dentist	14	33.3	
	Do not know	10	23.8	
6. If reimplanted, what do you think will be the best time to put the tooth back in socket?	Immediately	12	28.6	0.02822
	Within 30 minutes	8	19	
	Within same day	6	14.3	
	Not important	2	4.8	
	Do not know	14	33.3	
7. Knocked out teeth needs treatment.	Agree	26	62	0.00034*
	Disagree	6	14	
	Do not know	10	24	
8. Coach is responsible for instructing the significance of using protective gears to avoid traumatic dental injury during sports.	Agree	38	90.5	<0.00001*
	Disagree	2	4.8	
	Do not know	2	4.8	

9. Dental trauma emergency management should be taught to coach.	Agree	36	85.7	<0.00001*
	Disagree	2	4.8	
	Do not know	4	9.5	
10. Mouthguards should be compulsory	Agree	38	90.4	<0.00001*
	Disagree	2	4.8	
	Do not know	2	4.8	
11. Do you need further information on this regard?	Yes	30	71.4	0.00548*
	No	12	28.6	

*p value <0.05 is significant

Table 3: Knowledge and awareness of sports-based dental injuries among sportspersons:

	Variable	Frequency (n)	Percent (%)	P value
Professional or amateur	Professional	82	36.8	0.00008*
	Amateur	141	63.2	
1. Evaluate the risk of trauma in your sports:	High	116	52	<.00001*
	Medium	80	35.9	
	Low	27	12.1	
2. Have you experienced any dental injury during sports?	Yes	54	24.2	<.00001*
	No	169	75.8	
3. If yes, what sort of dental injury	Soft tissue laceration	38	17	<.00001*
	Loosened tooth	5	2.2	
	Tooth fracture	9	4	
	Knocked out tooth	1	0.4	
	Dislocation of tooth	2	0.9	
	No injury	168	75.3	
4. If yes, have you had any treatment done?	Yes	46	20.6	0.0364
	No	28	12.6	
	No injury	149	66.8	
5. Are you aware how to proceed in case of knocked out teeth	Yes	89	39.9	0.00258*
	No	134	60.1	
6. If yes, what will you do in case of knocked out tooth	Replace the tooth in the socket	27	12.1	0.00199
	Seek the dentist immediately	55	24.7	
	Do not know	141	63.2	
7. Are you aware of mouthguards?	Yes	170	76.2	<.00001*
	No	53	23.8	
8. If yes, from whom you got the advice?	Coach / Teacher	148	82.23	<.00001*
	Team mate / Classmate	27	15	
	Other sources	5	2.77	
9. Frequency of mouthguard wears at training	Never	70	31.4	0.68497
	Sometimes	81	36.3	
	Always	72	32.3	
10. What other types of aids you use for protection?	Face guard only	23	10.3	<.00001*
	Nose Protector only	0	0	
	Elbow guard only	12	5.4	
	Other	106	47.5	
	Combinations of the above	55	24.7	
	Do not use	27	12.1	
11. Do you feel to update your knowledge about trauma related to	Yes	145	65	<.00001*
	No	78	35	

sports				
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*p value <0.05 is significant

Graph 1: Overall knowledge and awareness of both group study participants

