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Dr. Lahari Buggapati
Assistant Professor, Department
Of Periodontics, Govt. Dental
College & Hospital, Vijayawada,
Andhra Pradesh, India

Dr. P Ravi Kumar
Head of the Department,
Department of Physical
Education, National Institution
of Technology, Warangal,
Telangana, India

Athletes awareness on importance of oral health during sports performance

Dr. Lahari Buggapati and Dr. P Ravi Kumar

Abstract

The word “sport” is derived from a combination of words meaning “to carry away from work”. In current usage, sport has come to encompass a wide range of human activities, skills, and accomplishments that are not part of routine life. Oral health is an integral part of general health and well-being and a basic human right. Possible sport-related causes of poor oral health include frequent dietary intake of carbohydrates, physiological changes such as decreased salivary flow and drying of the mouth during exercise and exercise-induced immune suppression. Demanding training regimes might make it difficult to access preventive care. No studies have evaluated the awareness of athletes on oral health and its status in India. Hence, the aim of the study is to evaluate how far the Indian athletes are aware on importance of oral health on their performance during sports.

Keywords: Sports, oral health, awareness on oral health, sports injuries

Introduction

Oral health is an important element of overall health, well-being and quality of life. The nexus between sport and oral health has largely been investigated through studies focused on the risk of trauma to oral health. However, athletes may have poor oral health including high levels of dental caries, dental erosion and dental trauma. Poor oral health can reduce quality of life and induce a systemic inflammatory response. Thus, poor oral health could affect athletic performance [1, 2, 3, 4].

Sports dentistry is one of the most recent and upcoming field in dentistry which had its origins in the 1980s. It mainly includes the prevention and management of athletics-related or facial injuries and associated oral diseases. The sports or team dentist assists athletes in the prevention, treatment, and diagnosis of oral injuries [5].

An epidemiologic study of dental injuries at the 1989 Canada Games recommended that sports governing bodies and major games organizing committees should be more active in promoting programs to prevent oral injuries and oral disease, including implementing mandatory mouth guard rules, particularly for sports that have a high risk for oral injury [6].

However, the relationship between oral health and performance is not well understood. Therefore, we aimed to determine the level of awareness of athletes on importance of oral health during sports performance. No studies have evaluated the oral health status of athletes in South India. Hence, we investigated the association of mouth guard awareness with the rate and type of or facial injuries during sporting activities among professional Indian athletes.

Materials and methods

This epidemiological study assessed the level of awareness of athletes on oral health on sports performance in Warangal, India. The department of physical education NIT Warangal provided the list of athletes enrolled at the stadium. Among 350 athletes, 294 participated in the study. We enrolled athletes who were training for participation on competitions and information regarding the study was given verbally and consent was taken. The participants were 18 to 21 years of age and resided in both residential and non-residential sports complexes.

The study was conducted for a period of approximately 2 months from January 2016 to February 2016 at the department of physical education, NIT Warangal.

Correspondence

Dr. Lahari Buggapati
Assistant Professor, Department
Of Periodontics, Govt. Dental
College & Hospital, Vijayawada,
Andhra Pradesh, India

A questionnaire was given to the participants that include the demographic data, their awareness on importance of oral health, dental trauma and its emergency management.

Statistical analysis

The chi-square test was used to determine statistical significance, which was defined as a *P* value of less than 0.05.

Results

In total 294 athletes (Age 18-21) were included in the study. There were 184 (62.8%) males and 109 (37.2%) females. Out of which 66.6% visited dentist frequently but only 33.4% visited dentist when problem arises.

Awareness of importance of dental visits was shown by 80.9% of the study sample and 20.1% felt that it is not important. 28.7% of the sample visited dentist in last 12 months rest 71.3% does not.

Oral health altering the training period in 54.6% and 45.4%

disagreed it. When asked about the type of dental problems which alter their training reveals caries (2.4%), gum problems (8.9%), sensitivity (31.1%), eruption of wisdom teeth (7.8%). Awareness of Importance of tooth brushing in avoiding cavities by 40.3%, for healthy gums by 35.8%, for avoiding tooth staining by 15% and for improving sport performance by 8.8% of the study sample.

13% of the study samples have oral injuries and 87% does not have any oral injuries during training period for which 22.5% will take precautions and 77.5 will not. Use of mouth guards for oral and maxillofacial injuries was supported by 34.5% and 65.5% did not support mouth guards.

Only 16% of the study sample having Knowledge of emergency treatments in oral and maxillofacial injuries 18% of the study sample agrees that sports training hampering their oral health.

15.4% of the study sample agrees that oral health affecting sports training.

Table 1: Characteristics of athletes.

Sex	Frequency	Percent
Male	184	62.8
Female	109	37.2
Oral health imp in sports		
Yes	227	77.4
No	66	22.5
Yes, source of information		
Television	60	20.5
News paper	40	13.7
Media	50	17.1
Others	83	28.3
Oral cavity		
Yes	215	73.3
No	78	26.6
Wisdom teeth		
Yes	155	52.9
No	138	47.1
Frequently visit dentist		
3 months	72	24.6
6 months	102	34.8
1 year	21	7.2
when problem arise	98	33.4
Dentist visit imp (A check up)		
Not at all	8	2.7
Not important	48	16.4
Important	197	67.2
Very important	40	13.7
Preventing tooth and gum disease		
Not at all	3	1.0
Not important	13	4.4
Important	140	47.8
Very important	137	46.8
Tooth problem		
Not at all	2	.7
Not important	5	1.7
Important	99	33.8
Very important	187	63.8
Dentist visit last 12 months		
Yes	84	28.7
No	209	71.3
Bothered by mouth, teeth or gums		
Yes	107	36.5
No	186	63.5
Oral health effect your quality		
Yes	80	27.3
No	213	72.7
Oral health effect general health		

Yes	231	78.8
No	62	21.2
Oral health effect your sports training		
Yes	45	15.4
No	248	84.6
Agree oral health alter your training		
Agree	160	54.6
Not sure	116	39.6
Disagree	17	5.8
Dental problems		
Caries	7	2.4
Gum problem	26	8.9
Sensitivity	91	31.1
Eruption of wisdom teeth	23	7.8
No	146	49.8
Important of tooth brushing		
Avoiding cavities	118	40.3
Healthy gums	105	35.8
Avoiding tooth staining	44	15.0
sports performance	26	8.8
Brush your teeth		
< 1 day	3	1.0
Once a day	227	77.5
>1 day	63	21.5
History of oral injuries		
Yes	38	13.0
No	255	87.0
Idea about Precautions to avoid maxillofacial		
Yes	66	22.5
No	227	77.5
Mouth guards		
Yes	42	14.3
No	251	85.7
Mouth guards for Oral and Maxillofacial		
Agree	101	34.5
No idea	180	61.4
Disagree	12	4.1
Emergency treatment on Oral and Maxillofacial		
Yes	47	16.0
No	246	84.0
drinks causes tooth sensitivity		
Agree	157	53.6
No idea	113	38.6
Disagree	23	7.8
Effect body immunity		
Yes	207	70.6
No	86	29.4
Sports training hampering oral health		
Yes	55	18.8
No	238	81.2
Dental checkup is regular		
Yes	262	89.4
No	31	10.5
Physical educators know about dental trauma		
Yes	278	94.9
No	15	5.1

Table 2: Various dental problems in athletes

Dentist visit last 12 months	Dental problems				Total
	Caries	Gum problem	Sensitivity	Eruption of wisdom teeth	
Yes	2	10	25	12	49
	4.1%	20.4%	51.0%	24.5%	100.0%
No	5	16	66	11	98
	5.1%	16.3%	67.3%	11.2%	100.0%
Total	7	26	91	23	147
	4.8%	17.7%	61.9%	15.6%	100.0%

Chi-square =5.46 P-value=0.14 NS

Table 3: Knowledge on importance of brushing

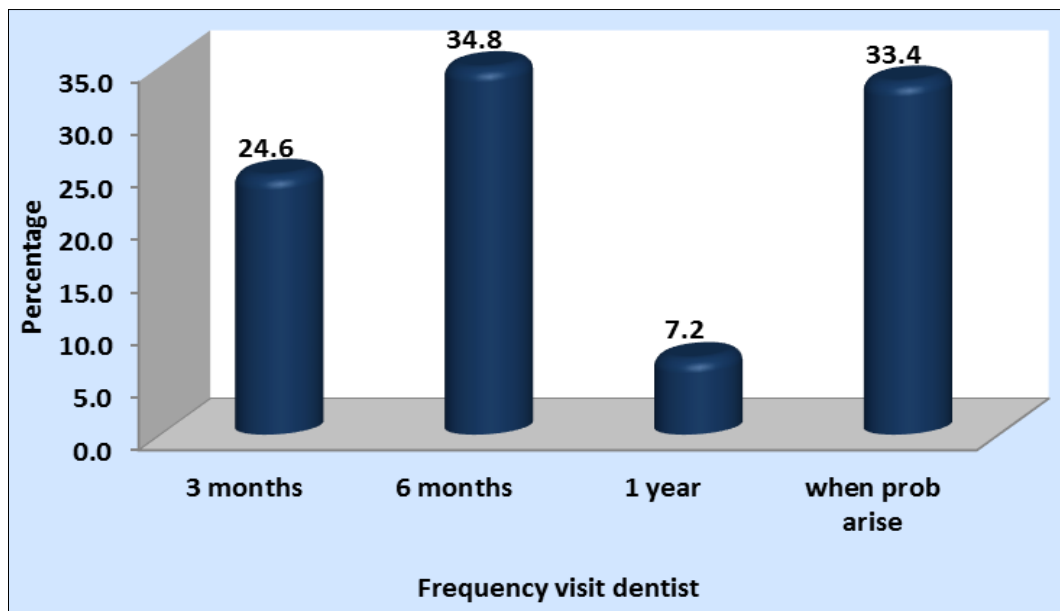
Brush your teeth	Dental problems				Total
	Caries	Gum problem	Sensitivity	Eruption of Wisdom teeth	
<1 day	0	0	2	0	2
	0.0%	0.0%	100.0%	0.0%	100.0%
Once a day	4	25	67	15	111
	3.6%	22.5%	60.4%	13.5%	100.0%
> 1 day	2	1	22	8	33
	6.1%	3.0%	66.7%	24.2%	100.0%
Total	6	26	91	23	146
	4.1%	17.8%	62.3%	15.8%	100.0%

Chi-square =9.047 P-value=0.17 NS

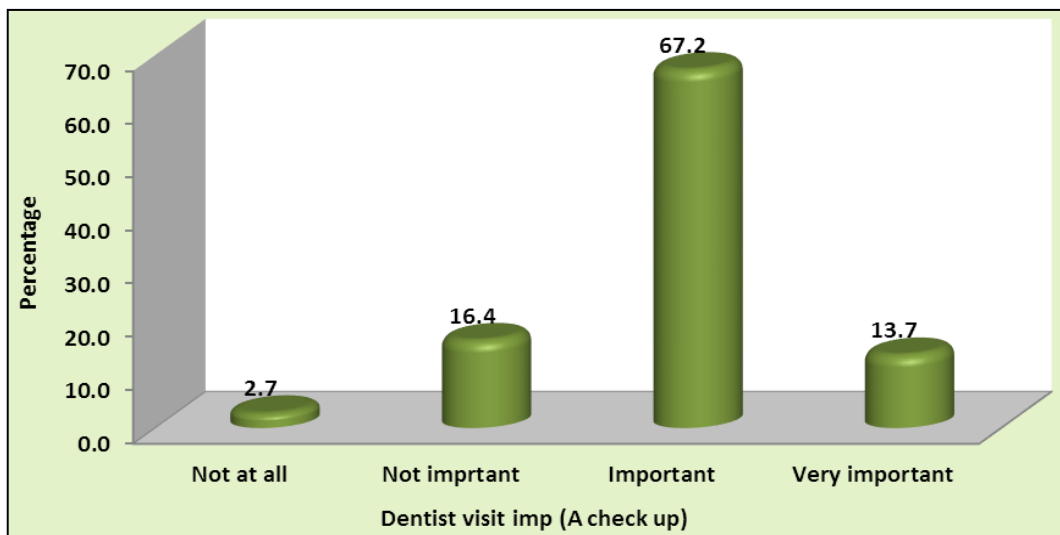
Table 4: Awareness on mouth guards

Mouth guards	Dental problems				Total
	Caries	Gum problem	Sensitivity	Eruption of Wisdom teeth	
Yes	1	1	15	6	23
	4.3%	4.3%	65.2%	26.1%	100.0%
No	6	25	76	17	124
	4.8%	20.2%	61.3%	13.7%	100.0%
Total	7	26	91	23	147
	4.8%	17.7%	61.9%	15.6%	100.0%

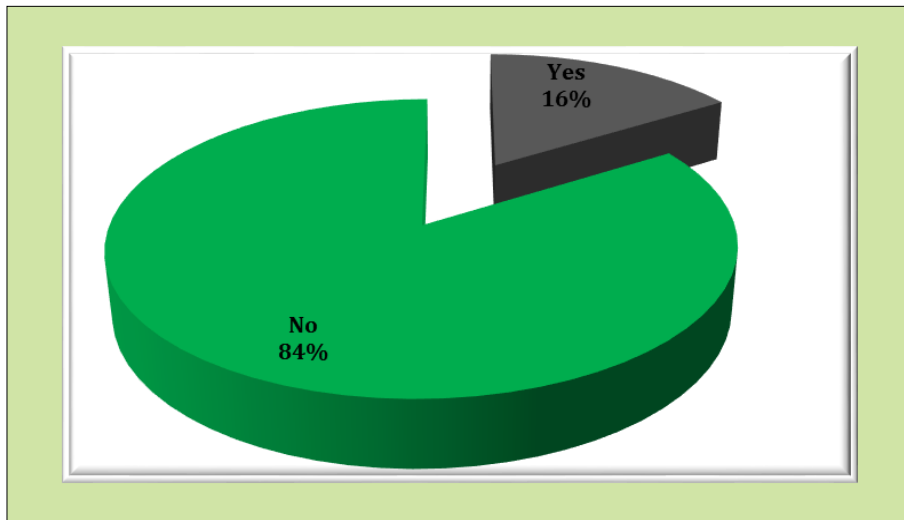
Chi-square =4.70 P-value=0.19 NS



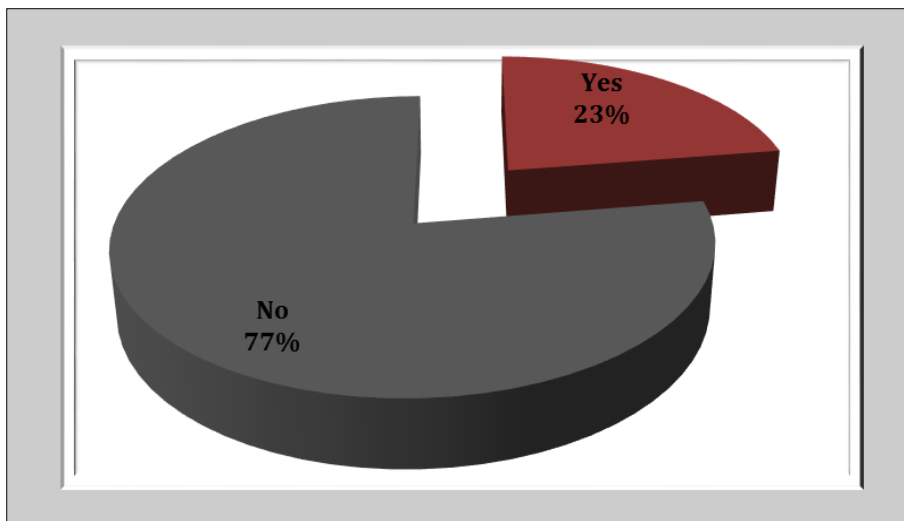
Graph 1: Showing the frequency of visits to dentist



Graph 2: Importance of dental visit.



Graph 3: Showing the awareness of emergency management of dental trauma.



Graph 4: Showing the awareness of precautions to be taken to prevent dental trauma.

Discussion

Direct comparisons with previous Olympic Games data are difficult as they have mostly reported dental service utilization rather than oral health. Data on the oral health of athletes are important for a number of reasons. First, it is important to understand the oral health of athletes in order to determine whether there is a need to implement relevant preventive care programs. Second, oral health data are important for planning of dental services at Olympic Games. Such information is essential to determining the size of resources required to meet the anticipated need and skill mix of the dental team ^[4].

A further reason for data acquisition is that poor oral health negatively affects oral health-related quality of life. It is possible that such an impact could adversely affect athletic performance and training. However, there are few data available that have explored this relationship. These studies consistently show that poor oral health is common and demonstrate a substantial amount of dental care is provided to athletes ^[4].

One of the earliest reports of Olympics data was a pilot study conducted on British athletes prior to the 1968 Games in Mexico City as well as a survey of other athletes participating in the Games themselves. The most common findings from these surveys are of pain from dental origin, caries, dental erosion, fractured teeth and restorations, pericoronitis and periodontal disease, that is, similar findings to the present

study. The association that we found between caries and well-being and performance might be explained by the experience of pain and interference with eating, drinking and sleep due to the caries. Previous studies of younger populations have found similar impacts of caries on life quality. Caries risk and disease levels have repeatedly been found to be high in athletes. This finding might result from frequent carbohydrate intake and reduced salivary flow in athletes ^[1, 2, 3, 4].

Sports-related facial injuries account for 8% of all facial soft tissue injuries. Approximately 11-40% of all sports injuries involve the face. These injuries are most often due to direct hits with a ball or player-to-player contacts. Healthcare 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 ^[7, 8].

The first and key part of the assessment of patients presenting with trauma is called the primary survey. During this time, life-threatening injuries are identified and simultaneously resuscitation is begun. A simple mnemonic, ABCDE, is used as a memory aid for the order in which problems should be addressed (A- airway, B- breathing, C- circulation, D- disabilities and E – exposed environment control). When the primary survey is completed, resuscitation efforts are well established, and the vital signs are normalizing, the secondary survey can begin. The secondary survey is a head-to-toe evaluation of the trauma patient ^[9].

When the training program is prolonged among the sports persons, they will be subjected to more stress and anxiety. Increased stress results in alteration in diet, nutrition and further affects oral hygiene maintenance which results in gingival and periodontal disease^[10, 11].

Our results confirm that mouth guards protect dental and periodontal structures during contact sports. The fact that most of the present athletes claimed knowledge or awareness of mouth guards yet did not use them supports the findings of similar previous studies^[6, 9].

The most important aspect in preventing sports-related or facial 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 which helps to 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^[12].

According to the American Dental Association, the use of faceguards and mouth protectors prevent more than 200,000 or facial injuries in football annually. Thus, mouth guards should be mandatory as an effective device for the prevention of dental and or facial injuries, as well as reducing the incidence and severity of minor traumatic brain injury^[6].

Sports governing bodies and major games organizing committees should work with dental hospitals and colleges in taking a more active role in promoting programs to prevent oral injury and disease and in requiring mandatory mouth guard use. Dental hospitals and dental supply companies can make mouth guards easily accessible^[5].

Participants in fast sport activities with close body contact are prone to or facial injuries. Dental injuries are the commonest type of or facial injuries, and are often sustained by athletes playing contact sports. The consequences of dental trauma can vary from simple tooth fractures to complicated tooth avulsion.

Prevention of oral and dental trauma during sport is an area where there is an almost total lack of information. Education should be provided as early as possible in schools and within sporting clubs, primarily targeting instructors, coaches and managers of sports facilities. This knowledge and awareness could then be passed on to athletes and their families. Compared with other outpatient injuries, traumatic dental injuries are more time consuming and costly to treat.

Tooth avulsion is a complex injury affecting multiple tissues with the complete displacement of a tooth from its alveolar support, and should be considered a genuine emergency requiring prompt and appropriate management to significantly improve prognosis^[12].

Mori *et al.* found that only 7% of sports participants knew that milk is the ideal storage medium for an avulsed tooth. Other possible transport media – if available at the site of the accident are via span, Hank's Balanced Salt Solution and physiological saline.

If everyone would keep in mind six simple rules for managing traumatic dental injury, the costs of treatment of tooth avulsion will drop significantly.

Those rules are:

1. locate the tooth as quickly as possible;
2. handle the tooth only by the crown (the white part);
3. replace the tooth in its socket immediately (see the adjacent teeth as a guide);

4. immobilize any loosened teeth (e.g. with aluminium foil);
5. if the tooth cannot be replanted, immediately place it into a physiological medium, keeping it wet at all times (e.g. use milk, saline or even saliva– place the tooth between the cheek and the lower molars) and
6. Attend a dentist as soon as possible.

Malocclusion or early stage orthodontic treatment should be considered predisposing factors to traumatic dental injury. Thus, dentists should identify and target patients who are at risk of dental trauma, especially active sports participants. Dental practitioners should also promote the use of mouth guards as a prevention measure to all patients involved in sport^[12].

Strengths and limitations of the study

The strength of the study included the number of athletes examined (n=294) and also to the best of our knowledge it is the first study to examine the awareness of athletes on importance of oral health in South India. It also assessed the knowledge on mouth guards and emergency management of dental injuries.

The limitations of the study included the selected nature of the sample and also organized examination of oral health is needed.

Conclusion

The extensive consequences of injury could be prevented with such simple knowledge and action. Further more, efforts should be made to train general medical practitioners and other emergency room staff to perform appropriate first aid procedures for dental trauma. This would result in an improved outcome for many thousands of sports participants worldwide who injure their teeth during play. It is the responsibility of the dental profession, therefore, to become more active in sports injury prevention programs. Many athletes are not aware of the health implications of a traumatic injury to the mouth or of the potential for incurring severe head and or facial injuries while playing. The dentist can play an imperative task in informing athletes, coaches and patients about the magnitude of dental sciences in preventing or facial injuries in sports. Education of all those involved is the key. 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.

Future outlook

Although it is still in its infancy, sports dentistry is an ever-expanding field. As dentists in practice, whether as general practitioners, specialists, academicians, or researchers, each one of us has a professional responsibility to become involved. Sports dentistry is certain to be a part of our future.

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