

Evaluation of Level of Awareness and Perception among Sports Instructors Regarding Usage of Mouthguards in South Chennai Region: A Cross-sectional Study

Sumaiyya Saleem¹, Swetha Raveendran Kalyani², Vishnu Rekha Chamarthi³, Dhanraj Kalaivanan⁴, Sai Sarath Kumar Kothimbakkam⁵, Santhosh Priya Appiya Krishnan Ramnath Babu⁶

Received on: 25 August 2023; Accepted on: 16 September 2023; Published on: 31 January 2024

ABSTRACT

Background: About 19–36% of orofacial trauma are sports-related injuries which is a growing concern that requires immediate attention. The present study aimed to evaluate the level of awareness and perception of sports instructors regarding mouthguard usage in the South Chennai region.

Materials and methods: The present cross-sectional study was conducted by means of a bilingual questionnaire which was distributed to the sports instructors individually by the investigator (hand in hand) and includes information on demographics, awareness, and perception regarding the usage of mouthguards.

Results: A p -value below 0.05 is considered statistically significant. Nonparametric test of Mann–Whitney U test and Kruskal–Wallis test was used to analyze the continuous independent variable and the dependent variables. There were statistically significant differences seen in the awareness level of mouthguards between the kinds of sports they teach. Similarly, those participants who were already aware of mouthguards also showed significant differences in their awareness level of mouthguards.

Conclusion: It could be concluded from the findings of a present survey that the majority of sports instructors in the South Chennai region are aware of mouthguards but do not recommend their usage at all times.

Keywords: Contact sports, Dental trauma, Mouthguards, Prevention, Sports instructors.

Journal of Oral Health and Community Dentistry (2023): 10.5005/jp-journals-10062-0175

INTRODUCTION

Sports are becoming a vital part of an individual's lifestyle due to their increasing benefits on health. However, participating in sports increases the risk of accidents by 6 times compared to work-related accidents and by 3 times compared to driving accidents.¹ Sports-related trauma is a serious public health concern due to its high frequency, high cost of care, lengthy recovery period, and psychological effects.² The British Dental Association (BDA) recommends the use of a well-made mouthguard for anyone engaged in contact sports and the International Academy of Sports Dentistry (IASD) recommends that mouthguards should be used in 29 sports and exercise activities.^{3,4} It has been demonstrated that wearing mouthguards reduces the chance of suffering injuries to the hard and soft tissues of the face by offering a strong, protective surface that distributes and dissipates transmitted stresses upon impact.⁵

A mouthguard, also known as a gumshield, mouth protector, or sports guard, has been defined as "a resilient device or appliance placed inside the mouth (or inside and outside), to reduce mouth injuries, particularly to teeth and surrounding structures."⁶ Mouthguards are typically made for the maxillary arch, but mandibular and bimaxillary mouthguards have also been described.^{7–9} They are of three types namely, Stock, boil, and bite, and custom-made mouthguards.

According to Levin et al., while 27% of research participants were aware that mouthguards were necessary, just 3% of them actively wore them.¹⁰ The most commonly mentioned obstacles to using

^{1–6}Department of Pediatric and Preventive Dentistry, Sathyabama Dental College and Hospital, Chennai, Tamil Nadu, India

Corresponding Author: Sumaiyya Saleem, Department of Pediatric and Preventive Dentistry, Sathyabama Dental College and Hospital, Chennai, Tamil Nadu, India, Phone: +91 9789937062, e-mail: sumaiyya.sms@gmail.com

How to cite this article: Saleem S, Kalyani SR, Chamarthi VR, et al. Evaluation of Level of Awareness and Perception among Sports Instructors Regarding Usage of Mouthguards in South Chennai Region: A Cross-sectional Study. *J Oral Health Comm Dent* 2023;17(3): 81–84.

Source of support: Nil

Conflict of interest: None

a mouthguard during practice, according to a study by Aljohani et al. in Saudi Arabia, were difficulties utilizing it during practice, not understanding its significance, and lack of awareness of its availability.¹¹ Therefore, the purpose of the present cross-sectional study was to evaluate awareness and perception among sports instructors for the usage of mouthguards in South Chennai.

MATERIALS AND METHODS

This cross-sectional study assessed the awareness and perception of mouthguards among sports instructors regarding the usage of mouthguard in South Chennai. The study population comprised

all active sports instructors from South Chennai. The study was carried out between 2 March 2023 and 30 April 2023, for around 3 months. Everyone who participated in the study gave their prior consent. The study received ethical clearance from the Sathyabama University Dental College Ethics Committee.

Inclusion and Exclusion Criteria

- Sports instructors who were willing to take part in the study and gave consent were included.
- Sports instructors who did not give consent to participate in the study were excluded.

Sample Size

The participants for the study include 47 sports instructors from various sports academies in the South Chennai region.

Survey and Method of Data Collection

Information on demographics, awareness, and perception regarding the usage of mouthguards, was collected by means of a bilingual questionnaire which was distributed to the sports instructors individually by the investigator (hand in hand) in their understandable language.

Statistical Analysis

The statistical package for this was analyzed using the statistical package for the social sciences (SPSS), version 21 (SPSS, version 21.0, IBM Corporation, Armonk, New York, USA). The Chi-square test was used to determine statistical significance, which was defined as a *p*-value of less than 0.05. The normality distribution test resulted in a *p*-value below 0.05. Hence, nonparametric test of Mann–Whitney *U* test and Kruskal–Wallis test was used to analyze the continuous independent variable and the dependent variables. Frequency distribution with percentage was used for categorical variables.

RESULTS

A total of 47 sports instructors participated in this cross-sectional survey, of which 35–44-year-old males were higher in number than other age-groups and females. Majority of the instructors had a bachelor’s degree and more than 5 years of experience. However, it was found that there were no statistically significant differences seen between the socio-demographic variables and their awareness level of mouthguards (*p* > 0.05) (Table 1).

There were statistically significant differences seen on the awareness level on mouthguards between the kinds of sports they teach. Similarly, those participants who were already aware of the appliance called the mouthguard also showed significant differences in their awareness level of the mouthguard (*p* < 0.05) (Table 2).

DISCUSSION

Despite efforts in reducing the number of dental trauma, most current studies indicate that the incidence of dental trauma remains unchanged and is at a relatively high level for children and young adults.¹² Of all childhood dental injuries, 10–38% are related to sports-related incidents.¹³ The likelihood of orofacial trauma from contact or collision with sports equipment (bats, balls, and sticks), other competitors’ bodies, and playing surfaces increases with the thousands of hours that athletes spend training and competing.¹⁴ Orofacial protectors could prevent injuries around the mouth,

Table 1: Characteristics of study participants

Variables	Frequency	Percent	Chi-square value	<i>p</i> -value
1. Age-group (years)				
18–24	1	2.1	5.928	0.205
25–34	2	4.3		
35–44	15	31.9		
45–54	27	57.4		
Above 54	2	4.3		
2. Gender				
Male	45	95.7	0.561	0.599
Female	2	4.3		
3. Educational qualification				
High school/diploma or equivalent degree	1	2.1	2.608	0.271
Bachelor’s degree	37	78.7		
Master’s degree	9	19.1		
4. Experience				
<2 years	1	2.1	0.114	0.945
2–5 years	8	17.0		
>5 years	38	80.9		

Table 2: Type of coaching of study participants

Variables	Frequency	Percent	Chi-square value	<i>p</i> -value
What kind of sports do you teach?				
Contact sports	27	57.4	20.993	0.001*
Noncontact sports	13	27.7		
Others	7	14.9		
Age-group (in years) you coach/teach				
5–10	13	27.7	7.82	0.349
11–15	43	91.4		
16–20 years	35	74.4		
Above 20 years	31	65.9		
Are you aware of the appliance called mouthguard?				
Yes	36	76.6	4.332	0.001*
No	11	23.4		

*Statistically significant when *p* < 0.05

which account for 50% of all sports-related injuries, according to the American Dental Association (ADA).¹⁵ Hence, the objective of the study was to assess the awareness and perception among sports instructors.

In this current survey, among 47 sports instructors, only 76.6% (36 instructors) were aware of the mouthguards. Furthermore, they were instructors of contact sports (88.8%) who recommend the usage of a stock mouthguard in their academy (69.4%) (Fig. 1). Nonetheless, according to Guérard et al., the customized mouthguard offers better protection because the stock mouthguard



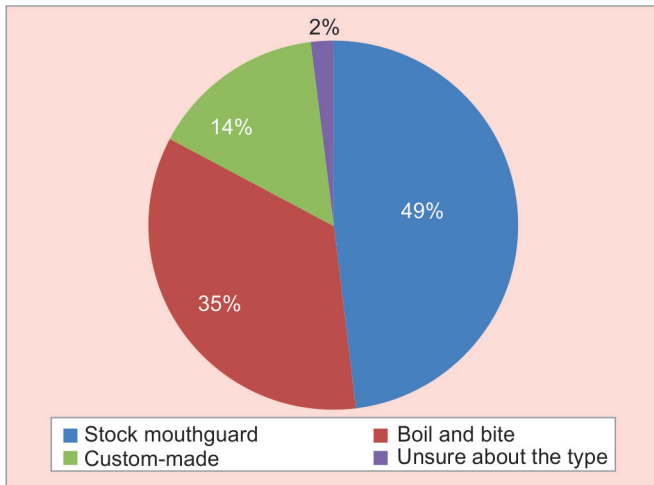


Fig. 1: Types of mouthguard children wear in academy

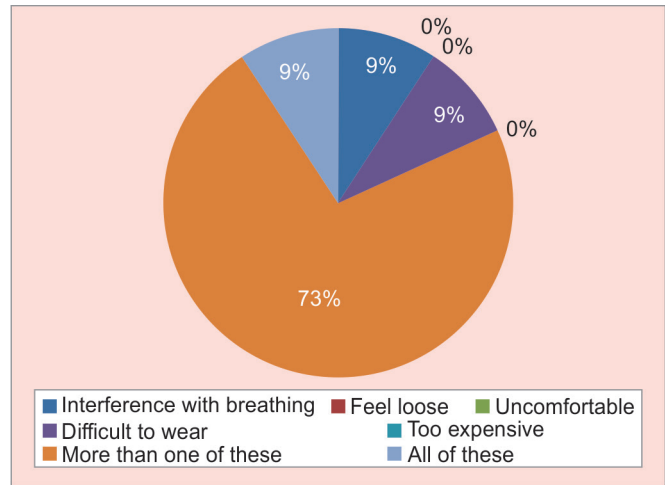


Fig. 3: Problems experienced with mouthguard

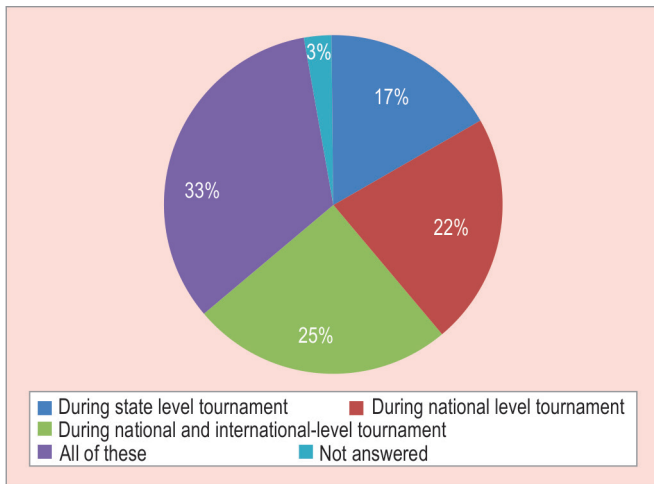


Fig. 2: Recommended phase to use mouthguard

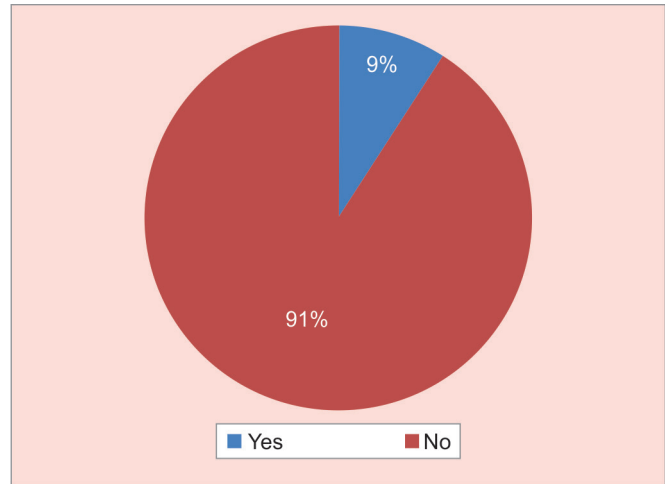


Fig. 4: Mouthguards inhibit athlete's performance

may become misaligned during use and interfere with its capacity to absorb impacts from the outside.¹⁶ Moreover, the American Society for Testing and Materials (ASTM) recommends custom-fabricated mouthguards for maximum protection, cushioning, and retention, which cover all teeth in at least one arch, customarily the maxillary arch, less the third molar.¹⁷

About 33% of sports instructors recommended wearing mouthguards during all levels of tournaments (Fig. 2). On the contrary, mouthguards are not typically worn by athletes during practice or competition. This is most likely because, as this study and earlier research have shown, athletes' and sports instructors' inadequate knowledge.¹⁸⁻²¹

We also observed that the awareness of mouthguards among the sports instructors during the training is significantly higher (76.6%) but the usage of mouthguards is minimal (56%). Despite the awareness of mouthguards, 40.4% of sports instructors did not recommend the usage of mouthguards for various reasons such as interference with breathing, improper fit, uncomfortable, difficulty to wear or not being economical. This is similar to our study conducted by Neeraja et al., however, the reasons stated were, that

40% of the athletes refrained from using the appliance due to the lack of availability, whereas 27% due to the lack of proper fitting of the appliance, 10% due to the difficulty in swallowing, and 8% had difficulty in speech (Fig. 3).²² Among 40.4% of sports instructors who did not recommend mouthguard usage, 9% had a misconception that mouthguard negatively influences the performance of athletes (Fig. 4), which is in concordance with a questionnaire study conducted by Di Leone et al.²³

It was observed that 55.3% of the instructors think it is essential for a dental surgeon to be part of the team. As 68.1% of sports instructors demonstrated interest in acquiring more information about the appliance, dental professionals must be educated regarding the availability and usage of mouthguards (Table 3).

CONCLUSION

The results showed that the majority of sports instructors in the South Chennai region are aware of mouthguards but do not recommend their usage at all times. To raise knowledge about mouthguard availability and place an emphasis on oral trauma

Table 3: Role of dental surgeon

Variables	Frequency	Percentage
1. Do you think it is important for a dental surgeon to be part of your team?		
Yes	26	55.3
No	14	29.8
Maybe	7	14.9
2. Has any dental surgeon ever informed you about the mouthguards?		
Yes	9	19.1
No	38	80.9
3. Would you like to have more information about the mouthguards and its types?		
Yes	32	68.1
No	15	31.9

prevention, a multidisciplinary team made up of pediatric dental surgeons, sports physicians, and sports instructors is needed.

ORCID

Sumaiyya Saleem  <https://orcid.org/0000-0002-4890-6667>

Vishnu Rekha Chamarthi  <https://orcid.org/0000-0002-3623-770X>

Santhosh Priya Appiya Krishnan Ramnath Babu  <https://orcid.org/0000-0003-0887-8507>

REFERENCES

- Muhtarogullari M, Demiralp B, Ertan A. Non-surgical treatment of sports-related temporomandibular joint disorders in basketball players. *Dent Traumatol* 2004;20(6):338–343. DOI: 10.1111/j.1600-9657.2004.00267.x.
- Petersen PE. The World Oral Health Report 2003: Continuous improvement of oral health in the 21st century—the approach of the WHO Global Oral Health Programme. *Community Dent Oral Epidemiol* 2003;31(Suppl. 1):3–24. DOI: 10.1046/j..2003.com122.x.
- British Dental Association. Mouthguards (position statement). Available at: <https://www.bda.org/dentists/policy-campaigns/public-health-science/public-health/position-statements/mouthguards>. Accessed on: 10 November 2016.
- American Dental Association. For the dental patient. The importance of using mouthguards. Tips for keeping your smile safe. *J Am Dent Assoc* 2004;135(7):1061. PMID: 15354910.
- Newsome PRH, Tran DC, Cooke MS. The role of the mouthguard in the prevention of sports-related dental injuries: A review. *Int J Paediatr Dent* 2001;11(6):396–404. DOI: 10.1046/j.0960-7439.2001.00304.x.
- American Society for Testing and Materials. Standard practice for care and use of athletic mouth protectors. West Conshohocken (PA): American Society for Testing and Materials, 2000. Technical Report No. F697-00.
- Takeda T, Kajima T, Nakajima K, et al. Paired maxillary and smaller mandibular mouthguard for rugby player with malalignment. *Dent Traumatol* 2014;30(1):76–80. DOI: 10.1111/edt.12050.
- Chapman P. Communication: The bimaxillary mouthguard: Increased protection against orofacial and head injuries in sport. *Aust J Sci Med Sport* 1985;17:25–29. DOI: <https://doi.org/10.1308/205016817821281738>.
- Milward PJ, Jagger RG. A bimaxillary sports mouthguard: A modified technique. *J Prosthodont* 1997;6(4):292–295. DOI: 10.1111/j.1532-849x.1997.tb00110.x.
- Levin L, Friedlander LD, Geiger SB. Dental and oral trauma and mouthguard use during sport activities in Israel. *Dental Traumatol* 2003;19(5):237–242. DOI: 10.1034/j.1600-9657.2003.00196.x.
- Aljohani YR, Alfaihi KH, Redwan SK, et al. Dental injuries in taekwondo athletes practicing in Saudi Arabia. *Saudi Med J* 2017;38(11):1143–1147. DOI: 10.15537/smj.2017.11.21111.
- Sigurdsson A. Evidence-based review of prevention of dental injuries. *Pediatr Dent* 2013;35(2):184–190. PMID: 23635988.
- Yadiki J, Alshammari NT. Awareness and utilization of mouthguards: An overview. *Saudi J Oral Dent Res* 2019;4(6):359–365. DOI: 10.21276/sjodr.2019.4.6.10.
- Lee-Knight CT, Harrison EL, Price CJ. Dental injuries at the 1989 Canada games: An epidemiological study. *J Can Dent Assoc* 1992;58:810–815. PMID: 1356606.
- Cornwell H. Dental trauma due to sport in the pediatric patient. *J California Dent Assoc* 2005;33(6):457–461. PMID: 16060338.
- Guérard S, Barou JL, Petit J, et al. Characterization of mouthguards: Impact performance. *Dent Traumatol* 2017;33(4):281–287. DOI: 10.1111/edt.12329.
- American Society for Testing and Materials. ASTM F697-16. Standard practice for care and use of athletic mouth protectors. West Conshohocken, PA. 2016. Available at: <https://www.astm.org/Standards/F697.htm>. Accessed on: 30 June 2023.
- Lieger O, von Arx T. Orofacial/cerebral injuries and the use of mouthguards by professional athletes in Switzerland. *Dent Traumatol* 2006;22(1):1–6. DOI: 10.1111/j.1600-9657.2006.00328.x.
- Cetinbaş T, Sönmez H. Mouthguard utilization rates during sport activities in Ankara, Turkey. *Dent Traumatol* 2006;22(3):127–132. DOI: 10.1111/j.1600-9657.2006.00397.x.
- Boffano P, Boffano M, Gallesio C, et al. Rugby athletes' awareness and compliance in the use of mouthguards in the North West of Italy. *Dent Traumatol* 2012;28(3):210–213. DOI: 10.1111/j.1600-9657.2011.01067.x.
- Ozbay G, Bakkal M, Abbasoglu Z, et al. Incidence and prevention of traumatic injuries in paediatric handball players in Istanbul, Turkey. *Eur Arch Paediatr Dent* 2013;14(1):41–45. DOI: 10.1007/s40368-012-0005-4.
- Neeraja G, Bharadwaj S, Shah K, et al. Knowledge, attitude, and practices regarding oro-facial injuries and oro-facial protective devices among physical instructors in Bangalore. *J Int Oral Health JIOH* 2014;6(3):1–6. PMID: 25083024.
- Di Leone CC, Barros IR, Salles AG, et al. Mouthguard use in martial arts: Awareness and attitude. *Revista Brasileira de Medicina do Esporte* 2014;20:451–455. DOI: <https://doi.org/10.1590/1517-86922014200602096>.