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Prevalence of orofacial trauma in soccer players of a Brazilian club

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ABSTRACT

Introduction: The objectives of the study were to evaluate the prevalence of orofacial injuries in soccer players of a Brazilian club, considering the category, the position in the field, and the most affected anatomic site, through medical records.

Methods: A total of 126 charts of players from the base categories (sub-15, sub-17, and sub-20) and male and female professional categories from 2016 to 2018 were evaluated. It was considered inclusion criteria to be a soccer player hired by a club in the indicated period. The exclusion criteria of the study correspond to the medical records registered after the chronological date stipulated or that did not have the correct registry of the occurred trauma.

Results: The data analyzed presented a moderate value in relation to the orofacial traumas prevalence, and 64.3% of the athletes of the club have some record type of trauma in the face. We observed that soft-tissue lacerations of the lips and dental fractures present the highest frequencies (73% and 27%, respectively). The positions of defender, striker, and midfield are the most susceptible to injuries (31%, 24%, and 23%, respectively).

Conclusion: Dental and orofacial trauma are a problem commonly encountered in sports, being present also in collective sports, such as football. It was observed a moderate prevalence of injuries on the face, especially among the athletes who are ahead of the attack line, with lip lacerations and dental fractures being the most common events.

Key words: Athletic injuries; mouthguard; physical education and training; sporty dentistry; tooth injuries

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INTRODUCTION

Trauma has a significant impact on the quality of life of the individual and may represent a painful experience, impair the function of the stomatognathic apparatus, affect orofacial function and esthetics, and influence the patient on an ssemotional and psychological level (1,2). Orofacial lesions can compromise the hard tissues of the tooth and the

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pulp, the periodontal ligament, the supporting bone structures, and the oral mucosa (3).

These types of trauma are increasing and sometimes require differentiated care and experienced professionals to provide good clinical behavior (4). The prevalence of orofacial trauma has been a relevant subject throughout the world, especially for public health, since sports activities are attracting more and more practitioners. It is estimated that approximately one-third of all dental injuries are due to accidents during sport, especially contact sports, where participants physically interact with each other (5,6).

With the increase in the popularity of some sports modalities and a greater incentive to sports participation at an early age, the role of the dental surgeon in relation to the prevention of dental trauma and orofacial lesions became more important (1). Children and teenagers are among the groups at greatest risk for dental trauma, where we can find approximately 80% of cases occurring in people under 20 years of age. This period corresponds to the stages of dental and skeletal development, being sensitive to problems that can occur in the management of dental trauma, which means that there is a need for long-term monitoring (1,7).

In general, orofacial injuries are very prevalent in soccer, and knowledge of these injuries and other forms of dental trauma within this group of sportsmen is quite limited (8,9). Some authors point out that soccer can be responsible for up to 50% of orofacial injuries in sport, due to its high popularity among amateur and professional athletes (10,11). In this sport, causes of injuries are involved with players' collisions between objects such as the ball head and the football boots head (12,13).

Orofacial trauma is a situation that can be softened and sometimes avoided when effective preventive actions are taken, such as the use of mouthguards (10). Since the dental surgeon is the most capable professional to accompany, prevent, and intervene in cases of orofacial lesions, knowledge of the prevalence of orofacial lesions in this sports environment is of great relevance. The objective of the paper to analyze the records on the prevalence of dental trauma and oral cavity injuries contained in the records of the players of América Futebol Clube.

METHODS

Ethics approval for the study was given by the hospital of Belo Horizonte committee on research ethics (#3.183.529). The privacy of the athletes has been protected.

This is a quantitative cross-sectional observational study that analyzed the records on the prevalence of dental trauma and oral cavity injuries contained in the records of the players of América Futebol Clube, which corresponds to a soccer club of the first division of the Brazilian Championship, from the city of Belo Horizonte, State of Minas Gerais, Brazil. Data were obtained by only one operator (L.L.F.) under the same conditions. The data were made available by the club's medical department. The records were made by the doctor or dentist who performed the procedure.

Sample

A total of 126 charts of players from the base categories (sub-15, sub-17, and sub-20) and male and female professional categories from 2016 to 2018 were evaluated. All the charts were evaluated in relation to the orofacial injuries and dental traumatism prevalence, being considered the following inclusion criteria to be a soccer player hired by club in the indicated period. The exclusion criteria of the study correspond to the medical records registered after the chronological date stipulated or that did not have the correct registry of the occurred trauma.

Data analysis

Data from medical records were analyzed, categorized, and presented as absolute values and percentiles, in tables. Data were analyzed using the Statistical Package for the Social Sciences version 17.0 for Windows. Data were submitted for analysis of t-test to compare the values of the means from samples of the basic and professional group and between positioning of the athlete in the field.

RESULTS

The vast majority of the records available correspond to the athletes of the basic categories (81.8%). In general, the data analyzed presented a high value in relation to orofacial traumas prevalence, 64.3% of the athletes of the club have some type of record of

trauma on the face, according to the corresponding period (Table 1).

Regarding the type of trauma, we observed that soft-tissue lacerations of the lips and dental fractures present the highest frequencies (73 and 27, respectively). Nasal fractures and maxillary bone fractures also showed a significant prevalence (7 and 3, respectively) (Table 2).

Considering the distribution of orofacial trauma between the base category and the professional, we noticed a higher prevalence of occurrences in the base categories (75.2%). Regarding the positioning of the athlete in the field, we noticed that the positions of defender, striker, and midfield are the most susceptible to injuries (31%, 24%, and 23%, respectively) (Table 3). The analysis of the statistical test not found a significant difference between the groups ($p = 0.06$).

TABLE 1. Characteristics of the sample

Variable	Sample *proportion (%)*
Sex (n/%)	
Female	23 (18.25)
Male	103 (81.75)
Distribution of the sample by category (n/%)	
Sub-15	36 (28.6)
Sub-17	35 (27.8)
Sub-20	32 (25.4)
Professional	23 (18.2)
Trauma report (n/%)	
Suffered some form of orofacial trauma	81 (64.3)
Trauma not reported	45 (35.7)

TABLE 2. Distribution of orofacial traumatisms by anatomical site

Location of trauma	Trauma occurrence number (n)
Lip lacerations	73
Dental fractures	27
Tongue lacerations	9
Laceration in the jugal mucosa	8
Nasal fractures	7
Chin lacerations	4
Maxillary bone fractures	3
Temporomandibular joint trauma	2

TABLE 3. Distribution of orofacial injuries by category and positioning

Distribution of trauma events	Trauma proportion (%)
Trauma by category of athlete (n/%)	
Sub-15	25 (18.8)
Sub-17	36 (27.1)
Sub-20	39 (29.3)
Professional	33 (24.8)
Trauma by the athlete positioning (n/%)	
Striker	42 (31)
Defender	32 (24)
Midfield	30 (23)
Full-back	19 (15)
Goalkeeper	10 (7)

DISCUSSION

Our study evaluated the orofacial injuries prevalence occurring in football players of base and professional categories. The majority of the sample was represented by data from athletes coming from the base categories (sub-15 – 28.6%, sub-17 – 27.8%, and sub-20 – 25.4%), this suggests that these athletes have greater access to health services, possibly because they presented a more flexible routine of activities. Concerning the orofacial injuries prevalence observed, the base categories had the highest reported frequencies (sub-15 – 18.8%, sub-17 – 27.1%, and sub-20 – 29.3%) when compared to professional categories (male 9.8% and female 15%). Some authors report that the greater presence of dental or orofacial injuries is related to the age group of the studied group and to the type of sport performed, which also suggest that the higher the domain of the technical aspects of the sport, the lesser the risk of injury arising from the practice of sports (14-16).

The high frequency of reported injuries (64.3%) in a short period of time (2 years) indicates that even in collective sports, a high risk of these types of orofacial injuries is observed and this information is also confirmed by other studies, emphasizing the importance and necessity of educational and preventive measures and actions, aiming at maintaining the athlete's health (17-19). Orofacial lesions may occur at different levels of severity and may lead to esthetic, functional, psychological problems, and important economic impact since eventually the treatment for

these types of accidents occurs in the medium and long term (19).

When analyzing the types of trauma that occurred more frequently, we identified that lips soft-tissue lacerations and dental fractures are the most reported (54.9% and 20.3%, respectively). These data are also consistent with other studies investigating the prevalence of orofacial lesions in soccer athletes (20). Usually, football is not considered a violent sport, but there is a clear risk of problems related to oral injuries. In this sport, eventual impacts can occur between head to head and elbow to face of opponent players, being these the main causes of the accidents (21).

Other lesions were also reported (tongue laceration 6.8%, laceration in the jugal mucosa 6.0%, nasal fracture 5.26%, chin laceration 3%, maxillary bone fracture 2.25%, and temporomandibular joint trauma 1.5%). It is important to consider that, regarding the severity of the lesion and the complexity of the treatment, the lesions related to nasal fractures and fractures of maxillary bones, even with low frequency, are significant, considering a short period of time analyzed. In other studies, athletes who suffered facial bone fractures reported that the lesions had a negative impact on sports performance after the recovery period, in addition to causing a fear state of fracture recurrence and important functional problems, causing some athletes, even, to drift apart from the sport (22,23).

When we consider the distribution of traumas by targeting the players in the field, we noticed that athletes who play as striker, defender, and midfield have a higher number of injuries (31%, 24%, and 23%, respectively) when compared with the other players, which is in agreement with the findings of other study, which also indicate a greater vulnerability of injuries to these situations (10). This can be explained because these athletes present themselves to the higher risk of shock with opponents, due to the intensity game in the moments of attack and defense. These data reinforce an idea that sports modality has an important influence on the risk of injuries (14-16).

Participation in sports, especially contact sports, greatly increases incidents related to dental injuries. These events often cause functional, esthetic, psychological, and economic problems. Overall, our data are similar to those found in other research when we compare the different categories of soccer (24,25). The use of mouthguards can be an interesting preventative measure as this device can reduce the frequency and severity of injuries. However, there is little knowledge of the benefits of using protective devices. Although dental injuries are common during professional soccer practice, there is a lack of information in the medical departments related to the conduct of prevention of dental trauma (10,26). In addition to the use of mouthguards, it would also be important to develop educational programs, including wide dissemination of information on the risks of traumatic dental injuries and protection methods (19).

However, some limitations should be noted. First, we use data from medical records. Eventually, failure to complete data may occur by the responsible team, resulting in an underestimated value of events. Second, some athletes, especially from professional categories, may receive care from their particular dentist and may also reduce the number of registrations. Third, the review period was short, from 2016 to 2018, which may limit the characterization of trends in orofacial trauma. Even with these notes, the survey of epidemiological data on the subject is very relevant to enable the planning of preventive actions.

CONCLUSION

Dental and orofacial injuries are a problem commonly encountered in sports practice, being also present in collective sports, such as soccer. Considering the results of the study, a moderate prevalence of injuries on the face was observed, especially among the athletes who are ahead of the attack line, with lip lacerations and dental fractures being the most common events. These types of occurrences caused by sports can be avoided with the use of protective equipment, such as mouthguards. The practice of using these devices is still poorly publicized among athletes, and it is up to the dental surgeon to guide and clarify those responsible on the importance of preventing these types of accidents and the correct use of mouthguards.

REFERENCES

1. Harhakis A, Athanasiadou E, Vlachou C. Social and psychological aspects of dental trauma, behavior management of young patients who have suffered dental trauma. Open Dent J 2017;11:41-7.

   https://doi.org/10.2174/1874210601711010041.

2. Sahni V. Psychological impact of facial trauma. Craniomaxillofac Trauma Reconstr 2018;11(1):15-20.

3. Biasca N, Wirth S, Tegner Y. He avoidability of head and neck injuries in ice hockey: An historical review. J Sports Med 2002;36(6):410-27.

   https://doi.org/10.1136/bjsm.36.6.410.

4. Christophel JJ, Park SS, Nogan SJ, Essig GF Jr. Facial trauma simulation course for evaluation and treatment of facial fractures. JAMA Facial Plast Surg 2017;19(6):464-67.

   https://doi.org/10.1001/jamafacial.2017.0313.

5. Dhillon BS, Sood N, Sood N, Sah N, Arora D, Mahendra A. Guarding the precious smile: Incidence and prevention of injury in sports: A review. J Int Oral Health 2014;6(4):104-7.

6. Ozbay G, Bakkal M, Abbasoglu Z, Demirel S, Kargul B, Welbury R. Incidência e prevenção de lesões traumáticas em jogadores de handebol pediátrico em Istambul, Turquia. Eur Arch Paediatr Dent 2013;14(1):41-5.

   https://doi.org/10.1007/s40368-012-0005-4.

7. Lee JY, Divaris K. Hidden consequences of dental trauma: The social and psychological effects. Pediatr Dent 2009;31(2):96-101.

8. Cerulli G, Carboni A, Mercurio A, Perugini M, Becelli R. Soccer-related craniomaxillofacial injuries. J Craniofac Surg 2002;13:627-30.

   https://doi.org/10.1097/00001665-200209000-00006.

9. Andersen TE, Arnason A, Engebretsen L, Bahr R. Mechanisms of head injuries on elite football. Br J Sports Med 2004;38:690-96.

10. Correa MB, Schuch HS, Collares K, Torriani DD, Hallal PC, Demarco FF. Survey on the occurrence of dental trauma and preventive strategies among Brazilian professional soccer players. J Appl Oral Sci 2010;18(6):572-6.

    https://doi.org/10.1590/s1678-77572010000600007.

11. Tozoglu S, Tozoglu U. A one-year review of craniofacial injuries in amateur soccer players. J Craniofac Surg 2006;17:825-7.

    https://doi.org/10.1097/01.scs.0000234982.54121.6b.

12. Celenk S, Sezgin B, Ayna B, Atakul F. Causes of dental fractures in early permanent dentition: A retrospective study. J Endod 2002;28:208-10.

    https://doi.org/10.1097/00004770-200203000-00016.

13. Scariot R, Oliveira IA, Passeri LA, Rebellato NL, Müller PR. Maxillofacial injuries in a group of Brazilian subjects under 18 years of age. J Appl Oral Sci 2009;17:195-8.

    https://doi.org/10.1590/s1678-77572009000300012.

14. Badel T, Jerolimov V, Pandurić J. Dental Orofacial trauma in contact sports and intraoral mouhgaurds progammes. Kinesiology 2007;1:97-105.

15. Kumamoto DV, Maeda Y. A literature review of sport-related orofacial trauma. General Dent 2004;52(3):270-80.

16. Tuli T, Hachl O, Hohlrieder M, Grubweiser G, Gassner R. Dentofacial trauma in sport accidents. General Den 2002;50(3):274-9.

17. Grashow RG, Roberts AL, Zafonte R, Pascual-Leone A, Taylor H, Baggish A, et al. Defining exposures in professional football: Professional American-style football players as an occupational cohort. Orthop J Sports Med 2019;7(2):2325967119829212.

    https://doi.org/10.1177/2325967119829212.

18. Beaudouin F, der Fünten KA, Tröß T, Reinsberger C, Meyer T. Time trends of head injuries over multiple seasons in professional male football (Soccer). Sports Med Int Open 2019;3(1):E6-11.

    https://doi.org/10.1055/a-0808-2551.

19. Dursun E, Ilarslan YD, Ozgul O, Donmez G. Prevalence of dental trauma and mouthguard awareness among weekend warrior soccer players. J Oral Sci 2015;57(3):191-4.

    https://doi.org/10.2334/josnusd.57.191.

20. Qudeimat MA, AlHasan AA, AlHasan MA, Al-Khayat K, Andersson L. Prevalence and severity of traumatic dental injuries among young amateur soccer players: a screening investigation. Dent Traumatol 2019;37:268-75.

    https://doi.org/10.1111/edt.12470.

21. Andersen TE, Arnason A, Engebretsen L, Bahr R. Mechanisms of head injuries in elite football. Br J Sports Med 2004;38(6):690-6.

22. Lennon P, Jaber S, Fenton JE. Functional and psychological impact of nasal bone fractures sustained during sports activities: A survey of 87 patients. Ear Nose Throat J 2016;95(8):324-32.

23. Bobian MR, Hanba CJ, Svider PF, Hojjat H, Folbe AJ, Eloy JA, et al. Soccer-related facial trauma: A nationwide perspective. Ann Otol Rhinol Laryngol 2016;125(12):992-6.

    https://doi.org/10.1177/0003489416668195.

24. Rahnama N, Reilly T, Lees A. Injury risk associated with playing actions during competitive soccer. Br J Sports Med 2002;36:354-9.

    https://doi.org/10.1136/bjsm.36.5.354.

25. Junge A, Rösch D, Peterson L, Graf-Baumann T, Dvorak J. Prevention of soccer injuries: a prospective intervention study in youth amateur players. Am J Sports Med 2002;30:652-9.

    https://doi.org/10.1177/03635465020300050401.

26. Ruslin M, Boffano P, ten Brincke YJ, Forouzanfar T, Brand HS. Sport-related maxillo-facial fractures. J Craniofac Surg 2016;27(1):e91-4.

    https://doi.org/10.1097/scs.0000000000002242