

Original

Prevalence of dental trauma and mouthguard awareness among weekend warrior soccer players

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Abstract: Traumatic dental and facial injuries are frequent in sports and often cause esthetic, functional, psychological, and economic problems. The term “weekend warrior” is used to describe people who participate in physically demanding activities only on the weekend, or part-time. In this prospective cohort study, we examined the prevalence of dental trauma and knowledge of traumatic dental injuries among weekend warriors in Ankara, Turkey. A detailed questionnaire on mouthguard awareness and knowledge and experience of dental trauma was distributed to 1,007 weekend warrior athletes participating in a soccer tournament. The results showed that 9.8% of participants had experienced orofacial trauma, 21.7% were aware of mouthguards, 2.9% reported using mouthguards, 15.4% were aware of the field of sports dentistry, and 19.6% were aware of emergency treatment for dental trauma. Participation in sports, especially contact sports, greatly increases the risk of dental injury. The present results show that knowledge of traumatic orofacial and dental injuries is limited among weekend warriors. Public health authorities should develop relevant educational programs, including broad dissemination of information on the risks of traumatic dental injuries and methods for protection against such injuries.

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Keywords: weekend warriors; dental trauma; mouthguard.

Introduction

Traumatic dental and facial injuries are frequent in sports and often cause esthetic, functional, psychological, and economic problems (1). Dental injuries are the most frequent orofacial injury related to participation in sports activities (1). The main causes of traumatic dental injuries are falls and collisions with people or objects, which are very common in contact sports (2-5). Participation in sports, especially contact sports, greatly increases the risk of traumatic dental injury (6,7).

Although sporadic physical activity has a variety of benefits for personal well-being, recreational sporting activities, including soccer, increase the risk of orofacial and/or dental injury caused by falls and collisions with people or objects (8,9). Soccer is one of the most popular team sports in the world and is played by approximately 200,000 professional athletes and 240 million amateur athletes (10). Although soccer is not regarded as a violent sport, it is associated with high risks of oral and facial injuries to players (11). The head is frequently used, and head-to-head and elbow-to-face impacts are the most frequent causes of orofacial injuries (12,13).

As countries become more aware of the importance of health, more people are participating in sporting activities ranging from participation on organized teams to weekend warrior activities. Because the average time spent at work is increasing; many people compress their weekly exercise time into long periods of activity on the weekend. This intensity is reflected in the term weekend warrior, which is defined as a person who participates

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in a physically demanding activity only on weekends or part-time (8,9,14).

Epidemiologic studies have reported the incidence/prevalence of sports-related dental injuries in various populations and sports; however, no study has investigated the prevalence of dental trauma in adult weekend warrior soccer players. We assessed the prevalence of dental trauma and knowledge of traumatic dental injuries among weekend warriors in Ankara, Turkey.

Materials and Methods

This prospective cohort study was conducted during a soccer tournament organized by the Ankara Province Directorate of Youth Services and Sports between April and June 2014. The participants in the soccer tournament were public employees from 78 public institutions, including ministry offices, directorates-general, universities, and government offices. Each public institution was allowed to announce a squad of 25 players. Six players younger than 30 years were permitted, three of whom were allowed to play on the first team of 18 players. Ethical approval was obtained from the Ethics Committee of the Hacettepe University (Decision number: GO 14/306-18), and all participants provided written informed consent. During the draws for the organization, each competent person or team coach was informed about the goals and design of the current study and submitted written informed consent if they chose to participate. The 25 questionnaire forms to be completed by the players were delivered to the attendants for each team. The 983 players who signed the informed consent form and

completed the questionnaire were included. The survey inquired about age, level of recent and previous soccer activity, and experience and awareness of dental trauma among weekend warriors (Tables 1, 2). The numbers and percentages of participants for each response were calculated with a statistical software package (SPSS 20).

Results

Of the 983 participants, 35 (3.6%) were 20-24 years of age, 146 (15.2%) were 25-29 years of age, 340 (35.3%) were 30-34 years of age, 206 (21.3%) were 35-39 years

Table 1 Education level and frequency of soccer participation

Characteristic	No. of participants (%)
Education level	
Primary or middle school	12 (1.2)
High school	220 (22.6)
University	596 (61.3)
Master's/doctorate	145 (14.8)
Soccer frequency	
No answer	13 (1.3)
Not regular	3 (0.3)
Once a month	96 (9.8)
Twice a month	95 (9.7)
Once a week	442 (45.0)
2-3 times a week	309 (31.4)
>3 times	25 (2.5)
Have you ever had a license?	
Yes	529 (53.9)
No	454 (46.1)
Type of license	
Professional	151 (28.5)
Amateur	378 (71.5)

Table 2 Awareness of dental trauma and oral hygiene habits

Question	Yes (%)	No (%)	No answer (%)
1. Have you experienced facial/dental trauma while playing soccer?	96 (9.8%)	882 (90.2%)	5 (0.5%)
2. Do you know what to do when a tooth is avulsed?	191 (19.7%)	781 (80.3%)	11 (1.1%)
3. Do you know about mouthguards?	211 (21.7%)	763 (78.3%)	9 (0.9%)
4. Have you ever used a mouthguard?	28 (2.9%)	946 (97.1%)	9 (0.9%)
5. Do you brush your teeth? If yes, how many times a day?	931 (94.7%)	28 (2.9%)	24 (2.4%)
	4 times 2 (0.2%)		
	3 times 60 (6.3%)		
	2 times 519 (54.1%)		
	1 time 350 (36.5%)		
6. Do you use dental floss?	249 (25.6%)	722 (74.4%)	1 (0.1%)
7. Do you know about the field of sports dentistry?	151 (15.4%)	823 (84.6%)	9 (0.9%)

of age, and 236 (24%) were 40-55 years of age; 20 did not report their age. Overall, 53.9% of players had received a license in a professional or amateur league, and 46.1% had not received such a license. Table 1 shows the frequency of soccer participation, education level, and athletic licenses obtained by weekend warriors. Table 2 shows the questions on awareness of dental trauma. Ninety-six players (9.8%) had experienced facial/dental trauma. The most frequent type of trauma was nose trauma ($n = 40$). In addition, seven had injuries to teeth, six had mandible injuries, and one had an injury to the tongue (Table 3). In total, 191 players stated that they knew what to do immediately after dental trauma resulting in avulsed teeth.

Most weekend warriors (78.3%) were unaware of mouthguards and their benefits. Only 2.9% of participants reported wearing mouthguards during sports activities. Although 151 players (15.4%) were aware of the field of sports dentistry, 823 (84.6%) were not.

Discussion

The main causes of sports-related dental trauma are falls and collisions with people or objects. Greater speed and contact increase the risk of trauma. Soccer was found to be associated with high risks of facial and dental injuries (5,13,15-17). However, previous studies enrolled professional soccer players and/or coaches. The current study is the first to examine the prevalence of dental injuries and knowledge of dental trauma among adult weekend warriors.

In the present study, 9.8% of adult weekend warriors in Ankara, Turkey reported a history of facial/dental trauma. Tozoglu et al. (17) investigated soccer-related orofacial injuries in amateur soccer players during a 1-year period. Soccer-related injuries represented 20.8%

(11 of 53) of all oral and craniofacial injury cases at the Maxillofacial Surgery Department of Dentistry Faculty, Erzurum, Turkey. Another study, in Greece, reported that 103 of the 173 patients requiring treatment for trauma during an 8-year period were amateur soccer players (13). Lack of proper training and protection may explain this high prevalence among amateur athletes (18). However, it is important to note that these results were derived from hospital-based rather than patient-based data and do not reflect a homogeneous group of soccer players like the present group of adult weekend warriors. In Italy, soccer was reported to be the most frequent cause (73.9%) of maxillofacial fracture (11). The frequency of oral and craniofacial injuries is related to the popularity of soccer and other sports in a population (11,17). In Austria, although soccer was responsible for 9% of all trauma cases, skiing was the most frequent cause of traumatic injuries (19).

Decreasing the number and severity of sports-related injuries is an important goal in many sports, and use of appropriate protective equipment, such as helmets, facemasks, and mouthguards, may help achieve this goal. Mouthguards are particularly useful for preventing dental/facial injuries. Use of mouthguards in contact sports may reduce the incidence of dental injuries by up to 90% (6,20). One study found that mouthguard use decreased the rates of dental injuries and referral to dentists in men's basketball teams (21). However, mouthguard use, although recommended, is not mandatory in many sports, including basketball and soccer. In the present study of adult weekend warriors, only 28 (2.9%) players had ever used a mouthguard; however, 211 (21.7%) were aware of mouthguards. Given that nearly 1,000 people participated in the present study, awareness and use of mouthguards is very low in this population.

Athletes report that mouthguard use during sports activities may result in discomfort. Difficulty breathing and alterations in strength and performance are related concerns about mouthguard use (22,23). However, a randomized, controlled, clinical trial found that custom-made mouthguards had no such detrimental effects (23). In contrast, boil-and-bite mouthguards can be uncomfortable and may cause breathing difficulties during sport activities (23).

In addition to trauma prevention, appropriate emergency intervention is extremely important. Tooth avulsion is a common form of dental trauma during sports, and practical information on treatment of avulsed or broken teeth may help preserve teeth and limit follow-up costs. The question, "Do you know what to do when a tooth is avulsed?", was positively answered by only

Table 3 Location of orofacial injuries

Location	No.
Nose	40 (29 fractures)
Teeth	7 (6 fractures)
Mandible	6 (2 fractures)
Head/brain trauma	5
Zygomatic bone	4 (2 fractures)
Eye	2
Face (soft-tissue laceration)	2
Ear (laceration)	1
Ear (membrane injury)	1
Tongue	1
Lip	1
Forehead	1
Unspecified	19

19.7% (191) of participants. Clearly, adult weekend warriors in our study are not well informed about this emergency procedure. We did not analyze additional knowledge, such as the need to recover lost teeth and tooth replantation. Educational programs should target this population. The existence of a soccer tournament between public employees enabled us to include a large number of weekend warriors. Because the participants were not members of an organization or team and were not supervised by coaches, educational programs might prove to be very useful interventions for this population. Current knowledge of the participants was derived from parents, school, television, books etc.

Among the participants, 61.2% had a university degree and 14.8% had a master's or doctorate degree. However, awareness of mouthguards and dental emergency treatment was very low, despite this high level of educational attainment. Furthermore, most participants had played licensed soccer. Bourguignon et al. (4) found that education was the best measure for preventing dental and oral injuries.

The number of weekend warriors is increasing. Facial/dental injuries may affect a weekend warrior's daily life, and severe injuries might even result in an extended absence from work. We believe that awareness of the prevalence of soccer injuries might allow sports medicine professionals and sports dentists to focus on specific preventive programs. We conclude that specific programs on trauma occurrence are needed at all education levels, starting in childhood. Weekend warriors have a wide variety of occupations, as soccer is not their profession. Dental students, dentists, and physicians working with sports dentists should increase their awareness of dental trauma among weekend warriors.

Conflicts of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and drafting of the paper.

References

1. Scott J, Burke FJ, Watts DC (1994) A review of dental injuries and the use of mouthguards in contact team sports. *Br Dent J* 176, 310-314.
2. Ranalli DN (2000) Prevention of sports-related traumatic dental injuries. *Dent Clin North Am* 44, 35-51.
3. Ranalli DN (2005) Dental injuries in sports. *Curr Sports Med Rep* 4, 12-17.
4. Bourguignon C, Sigurdsson A (2009) Preventive strategies for traumatic dental injuries. *Dent Clin North Am* 53, 729-749.
5. Correa MB, Schuch HS, Collares K, Torriani DD, Hallal PC, Demarco FF (2010) Survey on the occurrence of dental trauma and preventive strategies among Brazilian professional soccer players. *J Appl Oral Sci* 18, 572-576.
6. Davies RM, Bradley D, Hale RW, Laird WR, Thomas PD (1977) The prevalence of dental injuries in rugby players and their attitude to mouthguards. *Br J Sports Med* 11, 72-74.
7. Sane J, Ylipaavalniemi P (1988) Dental trauma in contact team sports. *Endod Dent Traumatol* 4, 164-169.
8. Lee IM, Sesso HD, Oguma Y, Paffenbarger RS Jr (2004) The "weekend warrior" and risk of mortality. *Am J Epidemiol* 160, 636-641.
9. Kohl HW 3rd (2005) The elderly "weekend warrior" and risk of mortality. *Clin J Sport Med* 15, 201-202.
10. Junge A, Rösch D, Peterson L, Graf-Baumann T, Dvorak J (2002) Prevention of soccer injuries: a prospective intervention study in youth amateur players. *Am J Sports Med* 30, 652-659.
11. Cerulli G, Carboni A, Mercurio A, Perugini M, Becelli R (2002) Soccer-related craniomaxillofacial injuries. *J Craniofac Surg* 13, 627-630.
12. Andersen TE, Arnason A, Engebretsen L, Bahr R (2004) Mechanisms of head injuries in elite football. *Br J Sports Med* 38, 690-696.
13. Papakosta V, Koumoura F, Mourouzis C (2008) Maxillofacial injuries sustained during soccer: incidence, severity and risk factors. *Dent Traumatol* 24, 193-196.
14. Kruger J, Ham SA, Kohl HW 3rd (2007) Characteristics of a "weekend warrior": results from two national surveys. *Med Sci Sports Exerc* 39, 796-800.
15. Rahnama N, Reilly T, Lees A (2002) Injury risk associated with playing actions during competitive soccer. *Br J Sports Med* 36, 354-359.
16. Pribble JM, Maio RF, Freed GL (2004) Parental perceptions regarding mandatory mouthguard use in competitive youth soccer. *Inj Prev* 10, 159-162.
17. Tozoglu S, Tozoglu U (2006) A one-year review of craniofacial injuries in amateur soccer players. *J Craniofac Surg* 17, 825-827.
18. Tesini DA, Soporowski NJ (2000) Epidemiology of orofacial sports-related injuries. *Dent Clin North Am* 44, 1-18.
19. Emshoff R, Schöning H, Röthler G, Waldhart E (1997) Trends in the incidence and cause of sport-related mandibular fractures: a retrospective analysis. *J Oral Maxillofac Surg* 55, 585-592.
20. Chapman PJ, Nasser BP (1996) Prevalence of orofacial injuries and use of mouthguards in high school Rugby Union. *Aust Dent J* 41, 252-255.
21. Labella CR, Smith BW, Sigurdsson A (2002) Effect of mouthguards on dental injuries and concussions in college basketball. *Med Sci Sports Exerc* 34, 41-44.
22. Ranalli DN (2002) Sports dentistry and dental traumatology. *Dent Traumatol* 18, 231-236.
23. Duddy FA, Weissman J, Lee RA Sr, Paranjpe A, Johnson JD, Cohenca N (2012) Influence of different types of mouthguards on strength and performance of collegiate athletes: a controlled-randomized trial. *Dent Traumatol* 28, 263-267.