Dental and oral trauma during childhood and adolescence in Israel: occurrence, causes, and outcomes

Levin L, Samorodnitzky GR, Schwartz-Arad D, Geiger SB. Dental and oral trauma during childhood and adolescence in Israel: occurrence, causes, and outcomes.

Abstract – The occurrence and causes of oral and dental injuries in a young Israeli population during childhood and adolescence were evaluated, as well as participants' awareness of using protective devices, such as mouth guards, during sporting activities. The survey consisted of 427 young adults, aged 18–21 years. A questionnaire was distributed relating to past oral and dental injuries over their lifetime; type of sporting activity practiced, specifying time, place and cause of injury; and use and awareness of protective devices. Participants who reported to be injured were asked to report the type of their injury, treatment provided, and satisfaction with the results. The total number of dental and oral injuries was 133, affecting 31.1% of the participants, in which 72 (16.9%) suffered dental injuries, mostly because of falls (64%), followed by sporting activities (23.2%), street-fights (7.2%), and car accidents (5.6%). Injuries occurred at school in 36.5% of cases and at home in 23.8% of cases. The most frequently reported injury was laceration (47.3%) followed by tooth fracture (41.9%). Of the 427 participants, 239 (56%) were active in at least one type of sport. Only 22.6% were aware of protective devices, e.g. mouth guards, and only 2.8% actually used these devices. These results show the high risk of potential dental and oral injury during childhood and adolescence, a lack of knowledge regarding the benefits of mouth guards and their limited use. Increased awareness of protective measures and devices, and their actual use should be encouraged with public health education.

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Dental and maxillofacial trauma is unfortunately very common (1–5). In a large cohort study of 10 436 patients treated at the hospital emergency room as a result of a traumatic episode, 765 (7.3%) had sustained injuries to structures of the oral cavity. The leading cause was falls (55.8%) (1). Traumatic injuries, beyond their direct effect on the afflicted patient, have additional consequences, including interruption of daily activity and a detrimental psychologic effect on the injured person. Treatment and the short- or long-term disruption may also cause considerable financial burden.

Prompt and appropriate management is necessary to significantly improve prognosis for many dento-alveolar injuries (6–8). Treatment of oral and maxillofacial injuries requires fastidious diagnosis and coordination between all treating professionals from the moment of injury.

Although dental injuries occur at all ages, sports-related accidents are the most commonly reported in children, 8–14 years (4, 5, 9). However, over the last several years this has changed (10, 11), with physical leisure activities as the most commonly reported. Most traumatic dental injuries occur at

home (12). In another report, unspecified falls was the most frequent cause of trauma in all age groups (13), with a high risk of complications. An important predisposing factor that will increase the success of treatment and decrease the risk of complications is the time of treatment. Moreover, complications can be eliminated with the correct diagnosis (6–8, 14).

To provide a basis for prevention, further research is needed to identify the causes of, and the personal and environmental risk factors for dental and oral injuries (15). Better understanding of the risk factors and etiology helps to prevent oral injuries. This knowledge is essential to develop and implement effective prevention.

The purpose of the present study was to evaluate the occurrence and causes of oral and dental injuries in a young Israeli population during childhood and adolescence. The participants' awareness of the use of protective devices, such as mouth guards, during sporting activities was also evaluated.

Materials and methods

The study population consisted of 427 young adults (males, 63.5%; females, 36.5%), 18–21 years old (mean 20 years) who arrived at a military dental clinic. There was no common background regarding place of birth, education and socio-economic setting. The Ethics Committee of the Medical Corps, Israel Defense Forces approved the study.

The survey, based on a questionnaire provided by the dental staff, addressed the following issues: past oral and dental injuries over lifetime, specifying time, place and cause of the injury; type of sporting activity practiced; and use and awareness of protective devices. Furthermore, participants who reported being injured in the past were asked to describe type of injury, treatment provided and their satisfaction with the results. To ensure anonymity, names were not recorded on the questionnaire. All participants answered the questionnaire.

Data were collected and analyzed by SPSS 10.0 (SPSS Inc., Chicago, IL, USA).

Results

The total number of dental and oral injuries was 133, affecting 31.1% of the participants in which 72 (16.9%) suffered from dental injuries. Average age of injury was 11.7 years (SD = 4.5). Most dental injuries occurred because of falls (64%), followed by sporting activities (23.2%), fists fight (7.2%), and car-accidents (5.6%) (Table 1). Injuries occurred at school in 36.5% and at home in 23.8% of cases (Table 2). The most frequently reported injury was laceration (47.3%) followed by tooth fracture (41.9%) (Table 3).

Table 1. Causes of dental injuries

Cause	No.	Percent out of all reported injuries
Fall	80	64
Sports	29	23.2
Fist fight	9	7.2
Car-accident	7	5.6

Missing = 8.

Table 2. Location of incident

Location	No.	Percent out of all reported injuries
Home	30	23.8
School	47	36.5
Street	50	39.7

Missing = 7.

Table 3. Type of injury and frequency

Type of injury	No.	Percent out of all reported injuries
Laceration	61	47.3
Tooth fracture	54	41.9
Avulsion	13	10.1
Jaw fracture	1	0.7

Missing = 4.

Table 4. Reasons of reported daily performance interference

Reason	No.	Percent out of all reported injuries
Pain	25	19.5
Esthetics	13	10.2
Functional	2	1.6

Of the 427 participants, 239 (56%) were active in at least one type of sport, either as professionals or amateurs. Only 22.6% were aware of protective devices, such as a mouth guards, and only 2.8% actually used these devices.

Participants reported on an injury that interfered with daily performance in 31.3% of the injuries (Table 4) for an average of 17.2 months (SD = 38). Table 5 shows the treatment for the reported injuries. Most participants were satisfied with the results. Dissatisfaction included impaired esthetic

Table 5. Treatment performed for the reported injuries

Treatment	No.	Percent out of all reported injuries
Bandaging and/or suturing	41	39.1
Tooth restoration	48	45.7
Root canal treatment	9	8.6
Crown	4	3.8
Tooth extraction	2	1.9
Hospitalization	1	0.9

Missing = 28.

results (24.1%), functional disturbances (13%), and pain (6.5%).

Discussion

In children and adolescents traumatic injuries are a common problem, with an increase in prevalence over the past few decades (16, 17). Variation in prevalence has been related to several factors, such as type of study, trauma classification, differences in methodology, limited age groups, and geographic and behavioral differences between study locations and countries (14, 17, 18). In the present study, the occurrence of oral and dental trauma was 31.1%, which is rather high. The knowledge of risk factors, such as incisal over-jet, inadequate lip coverage, and causes (falls, sporting activities, traffic accidents) is essential for effective prevention.

Patients exposed to trauma are not only physically, but also psychologically affected (19). Dental trauma is also a source of distress for the parents of the children. It has been shown that a fractured permanent tooth is a tragic experience for both child and parents, who are more concerned with the esthetics rather than the symptomatic aspects of the problem (20, 21). The present results indicated that one-fourth of the injured participants reported dissatisfaction from the esthetic results while only 6.5% reported pain.

The most common etiologic reasons reported in the literature are falls, automobile-bicycle accidents, collisions, and sports activities (5, 11, 22–24). In the present study, most dental injuries occurred because of falls and sporting activities, with over one-third occurring at school. This should warrant public interventions to reduce the risk for traumatic injuries among children and adolescents. Awareness of oral trauma among teachers and educational personnel, as well as among parents, could reduce this high injury rate.

Active participation in sporting activities, besides its many beneficial effects, often increases the risk of traumatic injury to dental and oral tissues. Such traumatic injuries, beyond their direct effect on the afflicted athlete, have additional consequences, including forced interruption of activity, sometimes of an entire team. Treatment and the short- or long-term disruption of the activity may also cause considerable financial burden. In addition, traumatic dental injuries may have a detrimental psychologic effect on the athletes and their colleagues (5).

The importance of using mouth protectors has been widely recognized (25, 26). Injuries, including dental and soft tissue injuries, as well as jaw fractures, concussions and neck injuries, have been dramatically reduced by the use of these devices.

Compliance with this regulation has been examined in only a few studies; Ranalli and Lancaster (26) found only partial compliance of football officials to mouth guard regulations. In the present survey, the level of usage, knowledge and awareness regarding the benefits of using a mouth guard in Israel was minimal. Dentists, as well as other healthcare professionals and sports authorities, should promote the use of mouth protection devices.

Conclusions

There is a high risk of potential dental and oral injury during childhood and adolescence. Most people have little knowledge regarding the benefits of mouth guards and their limited use. This high injury rate can be reduced by raising the awareness of oral trauma among teachers and educational personnel, as well as among parents. The importance of public health education to increase the awareness of protective measures and devices and their actual use should be the main focus.

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