Dento–alveolar and maxillofacial injures – a survey of knowledge of the regimental aid providers in the Israeli army

Levin L, Lin S, Emodi O, Gordon M, Peled M. Dento-alveolar and maxillofacial injuries – a survey of knowledge of the regimental aid providers in the Israeli army.

Abstract - The present study evaluated the knowledge of physicians and emergency medical technicians (EMT) regarding primary treatment for oral and maxillofacial trauma and assessed the experience they have in treating oral and maxillofacial injuries. The study population consisted of 80 military physicians and EMT during their military service. A questionnaire was distributed relating to demographic data such as age, gender, position, and type of military service, as well as past experience in treating or witnessing oral and maxillofacial trauma, former education regarding diagnosis and treatment of oral and maxillofacial trauma, assessment of knowledge regarding oral and maxillofacial trauma, etc. The questionnaire was answered by 76 participants (95% response rate): 32 physicians and 44 EMT. Only 17 (22.4%) received education regarding oral and maxillofacial trauma (eight physicians, 25% and nine EMT, 20.5%). Nevertheless, 23(30.3%)reported witnessing such an injury during their military service. Oral and maxillofacial injuries were first seen by the EMT in 43.4% of the cases, a physician in 23.7%, and a dentist in only 9.2%. Overall, 66 (86.8%) of the physicians and EMT stated that it was important to educate the primary health care providers regarding diagnosis and treatment of oral and maxillofacial trauma. Special emphasis should be given to providing primary caregivers with the relevant education to improve their knowledge and ability of dealing with diagnosis and treatment of oral and maxillofacial trauma.

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Dento-alveolar and maxillofacial injuries constitute an important part of the total injuries at times of war and during basic and advanced training in the military service (1). Facial injuries are found in nearly every military framework, particularly in combat and mobile units (1, 2). Unfortunately, oral and maxillofacial trauma is not uncommon. 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 of dental injury was falls, which accounted for 55.8% of the injuries (3). In the military, dento-alveolar and maxillofacial injuries are as high as 16% (2). As well as the physiological injuries, there are economic and psychological components that accompany these injuries, causing the Israel Defense Forces (IDF) additional economic expenses.

Prompt and appropriate management is necessary to significantly improve prognosis for many dento-alveolar injuries, especially in a young patient. Treatment of oral and maxillofacial injuries requires fastidious diagnosis and co-ordination between all treating professionals from the moment of injury.

Active participation in physical activities, such as sports, military training, etc. often increases the risk of traumatic injury to the dental and oral tissues (4–8).

While the overall US Army accidental dentofacial injury rate is 37.7 cases/10 000/year, this varies greatly for specific sub-groups with high-risk factors including young males, lower enlisted ranks, recent recruits, and combat training posts. The primary specific causes of these injuries are fistfights (nearly 30%), sports (over 20%), and vehicles (about 15%) (1).

These traumatic injuries, beyond their direct effect on the afflicted patient, have other consequences, including forced interruption of activity, sometimes of an entire team. Treatment and the short- or long-term disturbance of activity of the patient may also cause considerable financial burden. As well, traumatic oral and maxillofacial injuries could have a detrimental psychological effect on the injured person and their colleagues (8).

It is important for physicians to understand dental disease and trauma to efficiently diagnose, treat, and refer patients with dental or oral and maxillofacial emergencies (9). Primary care providers [e.g., family physicians, pediatricians, nurses, physician assistants, and emergency medical technicians (EMT)] could play a pivotal role in the provision of primary care after oral and maxillofacial trauma, especially for groups with limited access to dental care. Given the current problems with access to dental care among low-income patients, there is a need to involve non-dental primary health care professionals in providing primary diagnosis and treatment for oral and maxillofacial trauma.

The purpose of the present study was to evaluate the knowledge of physicians and EMT regarding primary treatment for oral and maxillofacial trauma and to assess the experience they have in treating oral and maxillofacial injuries.

Materials and methods

The study population consisted of 80 military physicians and EMT during their military service, randomly selected from the School of Military Medicine for continuing education. Inclusion required active service of at least 1 year in the medical corps before the study. The group had no common background regarding place of birth, education, and place of military service. The survey was based on a questionnaire provided by the authors. To ensure anonymity, names were not recorded on the questionnaire. The survey included demographic data, such as age, gender, position, and type of military service, as well as past experience in treating or witnessing oral and maxillofacial trauma, former education regarding diagnosis and treatment of oral and maxillofacial trauma, assessment of knowledge regarding oral and maxillofacial trauma, etc.

The study was voluntary and The Ethics Committee of The Medical Corps, IDF approved the study. The questionnaire was answered by 76 of the participants (95% response rate). Data were collected and analyzed by SPSS 10.0 (SPSS, Inc., Chicago, IL, USA).

Results

Of the 76 (95%) participants, there were 69 (90.8%) males and 7 (9.2%) females, in which 32 (42.1%) were physicians and 44 (57.9%) EMT, mostly serving in field units (71%).

Only 17 (22.4%), 8 (25%) physicians and 9 (20.5%) EMT received education regarding oral and maxillofacial trauma. Nevertheless, 23 (30.3%) witnessed such an injury during their military service (Table 1). Of the oral and maxillofacial injuries, 43.4% were first seen by the EMT, 23.7% by the physician, and only 9.2% by a dentist.

Answers to questions regarding treatment of oral and maxillofacial trauma by physicians and EMT are shown in Table 2.

Overall, 66 (86.8%) of the participants stated that it was important to educate primary health care professionals regarding diagnosis and treatment of oral and maxillofacial trauma.

Table 1. Oral and maxillofacial trauma witnessed during military service

	Physicians (%)*	EMT (%) [†]	Total (%)
Witnessed	7 (21.9)	16 (36.4)	23 (30.3)
Did not Witness	25 (78.1)	28 (63.6)	53 (69.7)
Total	32	44	76 (100)

*Percent of all physicians.

+Percent of all EMT.

Discussion

Unfortunately, oral and maxillofacial injuries are not uncommon, especially among army personnel. In a study conducted to assess trends in maxillofacial injuries in wartime between 1914 and 1986, the overall mean incidence of head and neck injuries was 16%, greater than expected in terms of random wounding and proportion of whole body surface area (12%) (2). Data from the Falklands Campaign and Northern Ireland indicate that 3-8% of all casualties sustained middle

Table 2	Answers to	a few questions	renarding	treatment	of o	oral and	maxillofacial	trauma	hv	nhysicians	and	FMT
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Question	Answer	Physicians (%)*	EMT (%) [†]	Total (%)
What will you do in case of oral trauma involving	Avoid mouth closure	11 (34.4)	15 (34.1)	26 (34.2)
tooth movement and inability to close the mouth?	Try to close the mouth correctly, by moving the tooth if possible	0	1 (2.3)	1 (1.3)
	Rinse with water	4 (12.5)	5 (11.4)	9 (11.8)
	Do not do anything	11 (34.4)	12 (27.3)	23 (30.3)
	Do not know	6 (18.8)	11 (25)	17 (22.4)
Indication for jaw fracture?	Facial pain	0	4 (9.1)	4 (5.3)
	Intra-oral bleeding	1 (3.1)	3 (6.8)	4 (5.3)
	Intra-oral hematoma	5 (15.6)	7 (15.9)	12 (15.8)
	Malocclusion	23 (71.9)	18 (40.9)	41 (53.9)
	Do not know	3 (9.4)	12 (27.3)	15 (19.7)
What is important to do in case of bilateral	Clean the area and stop bleeding	1 (3.1)	1 (2.3)	2 (2.6)
mandibular fracture?	Keep airway open	23 (71.9)	29 (65.9)	52 (68.4)
	Immediate evacuation	3 (9.4)	4 (9.1)	7 (9.2)
	Do not know	5 (15.6)	10 (22.7)	15 (19.7)

*Percent of all physicians. [†]Percent of all EMTs.

or lower third fractures of the facial skeleton (2). Terrorist activity gives rise to more head and neck injury than either rural attack or minor or major conventional war. In a retrospective cross-sectional study conducted using hospital-based records of bomb-blast survivors admitted at the Kenyatta National Referral and Teaching Hospital in Nairobi, 78% of the 290 bomb-blast survivors had sustained one or more maxillofacial injuries. The most common were soft-tissue injuries (cuts, lacerations or bruises), constituting 61.3% of all injuries in the maxillofacial region. There were 27.6% with severe eye injuries, and 1.4% with fractures in the cranio-facial region (10).

Maxillofacial injuries are quite significant. In certain cases the injury may not be serious (e.g., rupture of the alveolar ridge) and therefore does not pose a risk to life. However, the long-term effect of the injuries is very serious, particularly from the psychological point of view, i.e., distortion of the face and the tooth area, as well as functional effects, including speech, mastication, etc.

In another study that revealed the etiologic factors related to dental injuries in Norwegian youth, aged 7–18 years, 4% of all injuries were classified as severe, in which only one-third could have been prevented (11). It was concluded that because of the complexity of these factors, it is neither easy to prevent oral and maxillofacial injuries nor prepare guidelines on prevention. These findings emphasize the importance of education of primary caregivers on the diagnosis and treatment of oral and maxillofacial trauma.

The present findings indicate poor knowledge regarding diagnosis and treatment of oral and maxillofacial trauma among physicians and EMTs, together with a high rate experience or witnessing such events. Special emphasis should be placed in providing primary caregivers with education during pre- and post-graduate programs. This will improve their knowledge and ability to handle oral and maxillofacial trauma.

The present study showed that only 8 (25%) physicians and 9 (20.5%) EMT received education with regards to oral and maxillofacial trauma, which indicates that this topic is neglected for primary caregivers. Moreover, many participants did not know the correct answers to questions regarding treatment of oral and maxillofacial trauma. Most oral and maxillofacial injuries were first seen by the EMT or physician compared to only 9.2% by a dentist. This underlines the educational importance, which is supported by the physicians and EMT who stated that it was important to educate the primary health care providers regarding diagnosis and treatment of oral and maxillofacial trauma.

Since the study population was pre-dominantly males, due to the convenience sampling of the military staff, no attempt was made to address the difference in the experience of oral and maxillofacial trauma diagnosis and treatment, or level of information and awareness regarding oral and maxillofacial trauma based on gender. The study relates only to the total population of military physicians and EMT.

The small cohort resulted in a small sub-sample of the group. Therefore, further research with a larger cohort is warranted. This was also a convenient sample of physicians and EMT, which could limit the possibility of generalization to other population groups. However, despite the limitations of the present study, the data emphasizes a need for further oral and maxillofacial health education and training for physicians and EMT.

Conclusions

Oral and maxillofacial injuries are common. Primary care providers (e.g., family physicians,

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pediatricians, nurses, physician assistants, and EMT) could play a crucial role in the provision of primary care following oral and maxillofacial trauma. Special emphasis should be given to provide primary caregivers with the relevant education to improve their knowledge and ability of dealing with the diagnosis and treatment of oral and maxillofacial trauma.

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