

Curbing Road Traffic Accidents – The Major Cause of Facial Fractures

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BACKGROUND

Every year road traffic accidents (RTAs) cause 1.2 million deaths worldwide and leave 20-50 million people disabled. RTAs are the second leading cause of mortality in the young (5–25 year-olds); 90% of RTA-related deaths occur in low-income and middle-income countries (http://www.unicef.org/iran/media_4783.html). Epidemiological studies indicate that RTAs also constitute the major cause of maxillofacial fractures (MF) and specific interest has been directed towards assessment of the incidence and prevention of these injuries (Schaftenaar et al., 2009; Shah et al., 2006; Gassner et al., 2003). Causes and trends of MFs vary in different societies (Gassner, Tuli, Hachl et al., 2003). Social, cultural, and environmental factors influence both the incidence and etiology of MFs (Schaftenaar et al., 2009; Shah et al., 2006; Gassner et al., 2003; Motamedi, 2003). Patterns vary from one country to another and have changed over the past decades and continue to do so (Gassner et al., 2003; Motamedi, 2003).

MFs from RTAs more commonly involve males between the aged between 21-30 years (Motamedi, 2003). It is noteworthy that the presentation of MF patterns is also influenced by geographic area, socioeconomic status, and period of investigation (Shah et al., 2006; Gassner et al., 2003; Motamedi, 2003).

IMPLICATIONS

MFs are associated with morbidity, facial deformity, loss of function and high treatment costs; they place a heavy burden on national healthcare systems ((Schaftenaar et al., 2009; Shah et al., 2006; Gassner et al., 2003). Facial fractures from RTAs are commonly associated with lost work days, high treatment costs, disfigurement and loss of function. Coordinated, periodic, sequential collection and assessment of data concerning demographic patterns of MF injuries are therefore done annually to assist healthcare, traffic officials and policy-makers assess, re-evaluate and compare the effectiveness and short-comings of current implemented protocols.

To this end, a 5-year study done by the first author in 2003 assessed 237 MFs and more recently conducted a comprehensive retrospective chart study in which we evaluated 8818 patients with MF from 2007 to 2013 at 11 medical centers nationwide. This multi-center study assessed the demographics, causes, prevalence, types and complications of MFs. We found RTAs remain to be the major cause (5579/8818) of MFs (63.81%, $P < 0.05$). This rate was greater than falls from heights 1226 (14.02%), altercations 769 (8.72%) and other factors which accounted for the remainder 436 (4.87%) of the causes. We noted a significantly greater incidence in males ($p < 0.05$) and a mean age of 28.18 years. Mandibular fracture (65.1%) was the most common fracture ($P < 0.05$).

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COMPLICATIONS

Complications associated with MFs included neurosensory disturbance of the inferior alveolar, infraorbital and mental nerves as well as neuromotor disturbance of the facial nerve, blurred vision, diplopia, limitation of eye movement, enophthalmoses, blindness, infection and osteomyelitis.

INTERVENTIONS FOR PREVENTION

The majority of RTAs are predictable and can be prevented. Many countries have achieved sharp reductions both in the number of RTAs and the frequency and severity of traffic-related injuries by addressing several key issues. Interventions proven to be effective have included:

Lowering the speed limit (reducing the average traffic speed by 1 km/h has led to a 4%–5% decrease in fatal crashes) (http://www.unicef.org/iran/media_4783.html).

Use of child restraints, such as infant seats have been shown to be highly effective in preventing injury and fatalities among both infants and young children travelling in automobiles (and may reduce death rates from RTAs by 71% among infants and by 54% among young children) (http://www.unicef.org/iran/media_4783.html).

Wearing a helmet is effective in reducing head injury and fatality from motorcycle and bicycle accidents (by about 70%). Helmets with a chin guard protect the mandible (the most commonly fractured bone associated with RTAs).

Traffic cameras, radars and enforcement of seat belts, air bags and anti-locking brakes are mandatory deterrents.

Provision of one-way roads (instead of two-way roads) is among the actions taken to decrease RTAs (preventing head-on collisions) (Schaftenaar et al., 2009; Shah et al., 2006; Gassner et al., 2003; Motamedi 2003).

Measures to separate different types of traffic providing safer routes for pedestrians and cyclists, building skywalks or underground crossings for pedestrians as well as use of speed bumps can be effective in preventing RTAs (http://www.unicef.org/iran/media_4783.html).

Despite implementation of the aforementioned issues, RTAs not only remain to be the major cause of MFs in our country but also have actually increased; when we compared the present study to the former 5-year study done by the first author in 2003 (Motamedi 2003), MFs from RTAs were noted to have risen by 10% whilst the most frequent age group, fracture patterns and other assessed parameters remained essentially the same. Thus, the question remains “what more can be done to reduce RTA-associated MFs?”

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