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# The prevalence of maxillofacial fractures due to domestic violence – a retrospective study in a hospital in Tehran, Iran

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Abstract – Background/Aim: Domestic violence has been identified as a cause of maxillofacial fractures especially among women. The present study investigated the maxillofacial fractures in Tehran, Iran, with special focus on injuries related to domestic violence. Material and Methods: Records of patients with maxillofacial fractures who were referred to Shariati hospital, Tehran, from June 2004 to June 2006 were considered to extract required data. The extracted data included the patients' gender, age, cause of fracture, and type of fracture. For patients with domestic violence recorded as their fracture cause, complementary data were also recorded. Chi-square test served for statistical analysis. Results: Totally, the records of 257 patients (188 men, 69 women) were considered. Of the 257 records studied, 188 records (73%)belonged to men. The most common fracture cause was vehicle accidents (55.3%) among both men (52.1%) and women (63.8%). The domestic violence stood for 3.5% of cases (all women). It was the fracture cause among 13% of women. One-third of women with domestic violence as fracture cause had previous history of fracture. The spouses of one-third of domestic violence victims were drug addicted. Conclusion: Prevalence of domestic violence as a cause for maxillofacial fracture is relatively high among women. Because these fractures can be life-threatening, appropriate strategies at both community and family levels should be implemented to prevent and reduce these types of fractures.

## Introduction

Domestic violence (DV) has been defined as 'deliberate, often repetitive, physical abuse by one family member against another: marital partners, parents, children, siblings, or any other member of a household' (1). DV is common in all societies (2), and in many cases, it is under reported because of fear, shame, low self-esteem, powerlessness among the victims, as well as lack of appropriate services or information about services (3). Moreover, DV is hardly diagnosed because of the absence of clearly defined signs and symptoms (4).

DV may cause injuries in various parts of the body including craniofacial complex. In many studies, it has been mentioned as a cause of maxillofacial fractures especially among women (4–9). In most cases of maxillofacial fractures resulted from DV, victims have been women injured by an intimate partner (4–6, 9).

Although some reports exist on maxillofacial fracture and its cause in various parts of Iran (10–12), to our knowledge, none of previous studies has focused on DV. Thus, the present study investigated retrospectively the maxillofacial fractures in Tehran, Iran, with special focus on injuries related to DV.

### Patients and methods

This retrospective study was carried out on the records of consecutive patients with maxillofacial fractures who were referred to Department of Oral and Maxillofacial Surgery, Shariati hospital, Tehran, Iran, from June 2004 to June 2006. Shariati hospital is one of the two main centers offering maxillofacial treatment services to about eight million residents of Tehran city. We considered all the records thoroughly and extracted required data. Data on patients' gender and age, in addition to cause and location of fracture, were gathered. In case of recording DV as the fracture cause, it was noticed that whether the patient had history of previous fractures and whether the spouse was drug addict.

The study was approved by the ethics committee of Research Deputy, School of Dentistry, Tehran University of Medical Sciences. All the records were considered anonymously, and no unnecessary extra information was extracted.

The data were analyzed by means of spss version 11.5 software (SPSS Inc., Chicago, IL, USA). Student's t-test and Chi-square test served for statistical analysis.

#### Results

In total, records of 257 consecutive patients were reviewed of which 188 records (73%) belonged to men (men/women ratio = 2.7). The mean age of the patients was 33.7 (range 2.5–81).

The most common cause of maxillofacial fracture was vehicle accidents (in 52.1% of men, 63.8% of women, and 55.3% in total) followed by fall (19.7% of men, 19% of women, and 19.5% in total) (Fig. 1).

DV was the cause of fracture among 3.5% of patients. All the victims of DV were women, which comprised 13% of all women. The mean age of DV victims was 33.8 years (range 22–50), and one-third of them had previous history of fractures. The spouses of one-third of these patients also were drug addict. None of the injuries owing to the domestic violence was caused by weapons. Among the women who were subject to domestic violence, 9% were drug addict.

The most common fracture as a result of DV was mandible fracture (38%) followed by dental fracture (29%), zygomatic fracture (21%), and nasal fracture (12%). The most common type of dental fracture was crown fracture (45%), followed by root fracture (36%), subluxation (17%), and intrusion (2%). All mandible and zygomatic fractures were treated by rigid internal fixation, while nasal and dentoalveolar fractures were treated with closed reduction techniques.

The most prevalent location of fracture was mandible in both the genders (48.9% of men, 65.2% of women, and 53.3% in total). The next location among men was zygoma (21.8%) and among women was nose (14.5%) (Fig. 2).

Fracture cause differed significantly between the two genders (P < 0.05), but no statistically significant difference related to gender was detected. The association between fracture cause and location was significant among women (P < 0.05), but insignificant among men.

#### Discussion

The present study investigated the maxillofacial fractures in Tehran retrospectively with special focus on domestic violence as a fracture cause. The results showed that DV was relatively a common cause of maxillofacial fractures among women.

The data of present study were gathered in Shariati hospital, one of the main two referral centers for maxillofacial fractures in Tehran. Because of its fame and location in the heart of the capital city, this center also admits many patients from those parts in the country that lack such a specific center. This seems to improve representativeness of the sample. On the other hand, the study relied on the patients' records, which may lack accuracy in some cases. Moreover, no possibility for supplementing the data with qualitative information existed with this method. Thus, the results should be interpreted cautiously from this point of view.

Men-to-women ratio in our study (2.7) was similar to a previous study (11) in Hamedan, Iran (3.8), but less than the ratios in some other studies (10, 12) in northern Iran (12) and Tehran (8). This ratio has been reported to be about four in China (13) and Brazil (14) and about three in Finland (15) and Jordan (16). Our finding is in line with these studies.

Previous studies have reported a variable range of DV among injured women from 29% in Scandinavia (17) to 5.6% in United States (3). In our study, the prevalence of DV as a cause of maxillofacial fracture was 13%. Similarly, a study on 53 male and 163 female patients in Turkey reported that 19.4% of maxillofacial fractures resulted from interpersonal violence (18). Another study from India has reported fight/assault as the cause for 16.3% of maxillofacial injuries (19). The corresponded figure also in Malaysia has been reported to be 17% (20). On the other hand, a study from United Arab Emirates has reported assault as the cause for 4.1% of facial



Fig. 1. Causes for maxillofacial fractures among a group of Iranian male (n = 188) and female (n = 69) patients.



Fig. 2. Location of maxillofacial fractures among a group of Iranian male (n = 188) and female (n = 69) patients.

fractures (21). This rate in another study from United States was reported to be 34% (4). Despite the higher rate in that study, the mean age of the patients (32.5 years) was similar to that in our study. A report from United States also revealed that 35% of DV victims had head injuries (22). Because of this high prevalence, it has been tried to use maxillofacial fracture as a predictor of DV among women, although the relation remained poor (4, 9). Anyway, cross-cultural differences seem to play a major role in the prevalence of DV and its consequences in different societies.

In previous studies, spouse's drug addiction has been reported to be in association with DV among women (23), and considerable evidence of an association between men's substance use and perpetration of physical violence exists (24). That's why the data on addiction of spouse were extracted in DV cases in our study. The finding that one-third of the spouses of DV cases were drug addict confirmed this association. Because the patients often do not tend to disclose such socially unacceptable behaviors as drug addiction, this seems to be an optimistic estimation of the real-life situation. The history of fracture among one-third of the DV cases also revealed the severity and persistence of the problem. A recent study from Iran also has reported higher prevalence of intimate partner violence among women whose husbands were addicts (25).

No data on drug type existed in the patients records. However, previous reports from Iran show that more than 95% of addicts in Iran use opioids (26). In many of the previous studies, the role of alcohol in DV has been highlighted (5–8, 15, 24). In Iran, alcohol consumption is forbidden (27) because of religious beliefs. This has led to low prevalence of alcohol consumption in the country so that below 2% of disease burden in Iran is related to alcohol (28). Moreover, people usually do not provide valid responses to such a critical issue. Thus, we did not collect data on alcohol consumption. In our study, the main cause of maxillofacial fractures was traffic accidents. This is in line with most of the previous studies (10–12, 14, 16, 29). The frequent locations of fractures in our study (mandible, midface, and dentoalveolar region, respectively) are also consistent with many of the previous studies in Iran (10–12) and elsewhere (13, 14, 29). Some discrepancies in this regard can be related to various classifications of maxillofacial factures.

#### Conclusion

Prevalence of DV as a cause for maxillofacial fracture is relatively high among women. As these fractures can be life-threatening, appropriate strategies at both community and family levels should be implemented to prevent and reduce these types of fractures.

#### **Conflict of interest**

The authors have no conflicts of interest.

#### References

- National Institute of Health (2009). http://www.ncbi.nlm.nih.gov/ mesh?term = domestic violence [accessed on 10 January 2011].
- Ramsay J, Carter Y, Davidson L, Dunne D, Eldridge S, Feder G et al. Advocacy interventions to reduce or eliminate violence and promote the physical and psychosocial well-being of women who experience intimate partner abuse. Cochrane Database Syst Rev 2009;8:CD005043.
- McLeer SV, Anwar R. A study of battered women presenting in the emergency department. Am J Public Health 1989;79:65–6.
- Perciaccante VJ, Ochs HA, Dodson TB. Head, neck, and facial injuries as markers of domestic violence in women. J Oral Maxillofac Surg 1999;57:760–3.
- Le BT, Dierks EJ, Ueeck BA, Homer LD, Potter BF. Maxillofacial injuries associated with domestic violence. J Oral Maxillofac Surg 2001;59:1277–84.

- 6. Huang V, Moore C, Bohrer P, Thaller SR. Maxillofacial injuries in women. Ann Plast Surg 1998;41:482–4.
- Hutchison IL, Magennis P, Shepherd JP, Brown AE. The BAOMS United Kingdom survey of facial injuries part 1: aetiology and the association with alcohol consumption. British association of oral and maxillofacial surgeons. Br J Oral Maxillofac Surg 1998;36:3–13.
- Christian CW, Scribano P, Seidl T, Pinto-Martin JA. Pediatric injury resulting from family violence. Pediatrics 1997;99:E8.
- Ochs HA, Neuenschwander MC, Dodson TB. Are head, neck and facial injuries markers of domestic violence? J Am Dent Assoc 1996;127:757–61.
- Kadkhodaie MH. Three-year review of facial fractures at a teaching hospital in northern Iran. Br J Oral Maxillofac Surg 2006;44:229–31.
- Ansari MH. Maxillofacial fractures in Hamedan province, Iran: a retrospective study (1987-2001). J Craniomaxillofac Surg 2004;32:28–34.
- Motamedi MH. An assessment of maxillofacial fractures: a 5-year study of 237 patients. J Oral Maxillofac Surg 2003;61: 61–4.
- Li YS, Tian WD, Li SW, Liu L. Retrospective analysis of 3,958 patients with facial injuries [Article in Chinese, summary in English]. Zhonghua Kou Qiang Yi Xue Za Zhi 2006;41:385–7.
- Chrcanovic BR, Freire-Maia B, Souza LN, Araújo VO, Abreu MH. Facial fractures: a 1-year retrospective study in a hospital in Belo Horizonte. Braz Oral Res 2004;18:322–8.
- Kontio R, Suuronen R, Ponkkonen H, Lindqvist C, Laine P. Have the causes of maxillofacial fractures changed over the last 16 years in Finland? An epidemiological study of 725 fractures Dent Traumatol 2005;21:14–9.
- Bataineh AB. Etiology and incidence of maxillofacial fractures in the north of Jordan. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 1998;86:31–5.
- Brismar B, Tunér K. Battered women. A surgical problem. Acta Chir Scand 1982;148:103–5.
- Ozkaya O, Turgut G, Kayali MU, Uğurlu K, Kuran I, Baş L. A retrospective study on the epidemiology and treatment of

maxillofacial fractures. Ulus Travma Acil Cerrahi Derg 2009;15:262-6.

- Chandra Shekar BR, Reddy C. A five-year retrospective statistical analysis of maxillofacial injuries in patients admitted and treated at two hospitals of Mysore city. Indian J Dent Res 2008;19:304–8.
- Hussaini HM, Rahman NA, Rahman RA, Nor GM, Ai Idrus SM, Ramli R. Maxillofacial trauma with emphasis on softtissue injuries in Malaysia. Int J Oral Maxillofac Surg 2007;36:797–801.
- Klenk G, Kovacs A. Etiology and patterns of facial fractures in the United Arab Emirates. J Craniofac Surg 2003;14:78– 84.
- 22. Monahan K, O'Leary KD. Head injury and battered women: an initial inquiry. Health Soc Work 1999;24:269–78.
- Bennett LW. Substance abuse by men in partner abuse intervention programs: current issues and promising trends. Violence Vict 2008;23:236–48.
- Testa M. The role of substance use in male-to-female physical and sexual violence: a brief review and recommendations for future research. J Interpers Violence 2004;19:1494–505.
- Vakili M, Nadrian H, Fathipoor M, Boniadi F, Morowatisharifabad MA. Prevalence and determinants of intimate partner violence against women in Kazeroon, Islamic Republic of Iran. Violence Vict 2010;25:116–27.
- Amani F, Sadegie Ahari S, Mohammadi S, Azami A. The trend in substance abuse among addicts referred to withdrawal centers, 1998–2003. Res Sci J Ardabil Univ Med Sci 2005;3: 220–4. (Article in Persian, Summary in English).
- WHO Global Status Report (2010). Alcohol policy in Islamic republic of Iran. http://www.who.int/substance\_abuse/publica tions/policy\_iran.pdf [accessed 18 January 2011].
- WHO (2004). Burden of diseases attributed to alcohol. http://www. who.int/substance\_abuse/facts/alcohol/en/index.html [accessed 18 January 2011].
- Aksoy E, Unlü E, Sensöz O. A retrospective study on epidemiology and treatment of maxillofacial fractures. J Craniofac Surg 2002;13:772–5.

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