

Maxillofacial Fractures in a University Hospital in Central Brazil

Fraturas Oralmaxilofaciais em um Hospital Universitário do Brasil Central

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Received:29/08/18

Approved:27/02/19

Abstract

The objective of this study was to evaluate epidemiological aspects of maxillofacial fractures in 346 hospitalized patients treated at the Department of Oral and Maxillofacial Surgery of the University General Hospital, Mato Grosso, Brazil. The following information was collected from the patients' medical records: gender, age, etiologic factor, type of injury, patient origin, seasonal distribution and hospital stay period. The statistical treatment analyzed data from frequency distribution and chi-squared test. The level of significance was set at 5% for all analyses. The highest incidence of maxillofacial fractures was found among males (n=290; 83.8%), with 21-30 years-old (n=120; 34.5%) and from inner cities of Mato Grosso (n=169; 48.9%). The main etiologic factor were vehicle traffic accidents (n=169; 48.9%), violence (n=65; 18.8%) and falls (n=25; 7.2%). The seasonal distribution showed that most of the cases occurred in the fall (n=89; 25.8%), winter and spring (n=77; 22.2% each). The lower third of the face was the most commonly involved region (n=276; 54.3%). The most frequently observed fracture involved the zygomatic complex (n=146; 28.7%), followed by the mandible body (n=99; 19.4%). The epidemiological aspects of maxillofacial fractures in this study were similar to those observed in other studies, regarding the prevalence of the male, age group and traffic accidents as the main etiologic factor.

Keywords: Tooth Injuries. Facial Bones. Epidemiology. Surgery, Oral.

Resumo

Avaliou-se os aspectos epidemiológicos das fraturas oralmaxilofaciais em prontuários de pacientes atendidos em um Hospital Universitário do Brasil central. A amostra do estudo foi proveniente da revisão de prontuários de 346 pacientes atendidos no Serviço de Cirurgia e Traumatologia Oralmaxilofacial do Hospital Geral Universitário na cidade de Cuiabá, Mato Grosso, Brasil. Os seguintes dados foram coletados dos registros hospitalares de cada paciente: sexo, idade, fator etiológico, região anatômica afetada, procedência, distribuição sazonal e período de internação. O tratamento estatístico analisou os dados frente à distribuição de frequência e qui-quadrado. O nível de significância foi de $p < 0,05$. Observou-se elevada frequência de fraturas oralmaxilofaciais em indivíduos do sexo masculino (n=290; 83,8%), com idade variando entre 21-30 anos (n=120; 34,5%) e provenientes de cidades do interior do estado do Mato Grosso (n=169; 48,8%). Os principais fatores etiológicos foram os acidentes de trânsito motorizados (n=169; 48,9%), violência (n=65; 18,8%) e quedas (n=25; 7,2%). A distribuição sazonal evidenciou elevado número de lesões no outono (n=89; 25,8%), inverno e primavera (n=77; 22,2%, cada um). O terço inferior da face foi a região mais comumente envolvida (n=276; 54,3%). A injúria mais comum foi a fratura do complexo zigomático (n=146; 28,7%), seguida da fratura do corpo da mandíbula (n=99; 19,4%). Os dados obtidos se assemelham aos encontrados na literatura, no que diz respeito à prevalência do sexo masculino, da faixa etária e dos acidentes de trânsito como principal agente etiológico.

Palavras-chave: Traumatismos Dentários. Ossos Faciais. Epidemiologia. Cirurgia Bucal.

1 Introduction

Special attention to the epidemiological knowledge of oral and maxillo facial fractures, highlights the guidelines for public health, particularly those that are related to the increase of violence, the number of traffic accidents and the participation of adolescents and young adults in sporting activities.

Fractures involving the maxillofacial complex represents one of the main public health problems in the world¹⁻⁴. Several studies have reported a considerable increase in the incidence of these injuries, mainly in areas of high social deprivation⁵⁻¹³, with significant impact on individuals and society. Its sequels imply restrictions on physical, economic and emotional well-

being, forming lasting problems, with repercussion to the patient and their relatives^{2,14,15}.

Facial trauma in the region often result in injuries to soft, dental tissues and the main bones of the skeleton of the face, including the mandible, maxilla, zygoma, naso-orbital-ethmoid complex and supraorbital structures^{8,16,17}. Several studies indicate the male patients as the main victims, with rates ranging between 67.7% - 89.0%. Another common characteristic of the various papers is that these lesions seem to be the most commonly observed in young patients aged less than 30 years^{2,18-24}. The etiology of facial fracture is heterogeneous, and the greater or lesser prevalence of an etiologic factor relates to some characteristics of the studied

population, as for example: age, gender, social class and location of trauma^{2,14,21,25,26}.

The Brazilian regions with population studies, such as the regions South, Southeast and Northeast, showed a prevalence of oral-maxillo-facial fractures ranging between 4.1% - 32%^{2,9-12,27,28}. These values reflect important cultural differences that include the environment and the population behavior, or reflect the different methodologies employed in the data collection from each study^{29,30}. In the Central-west region only the studies of Leles *et al.*³¹, Pereira *et al.*³² and scartezini *et al.*⁴ were identified.

Before the gravity of the situation, public administrators need to establish priority actions with a view to prevention and attention to the victims. The planning of actions should consider the regional knowledge of the major involved risk factors. From the evidences of the limited amount of epidemiological investigations in the Brazilian population and due to considering the specificities and demographic differences, cultural and socioeconomic characteristics, the objective of this study was to analyze the epidemiological aspects of oral-maxillo-facial fractures in a University Hospital in Central Brazil.

2 Material and Methods

This was a retrospective cross-sectional study, conducted through review of medical records of patients with a history of maxillofacial fracture and treated in the Department of Maxillofacial Surgery and Traumatology (CTBMF) of the General University Hospital (HGU), located in Cuiabá, Mato Grosso, Brazil (latitude 15° 35' 46" South; longitude 56° 05' 48 West) in the period between December 2001 and June 2014. The search was developed based on records officially filed by

the File and Statistical Service of HGU.

The inclusion criteria for this study were records of patients affected by maxillofacial trauma and treatment of facial fractures performed in that hospital. Data records were excluded from the study that were not specified.

Data related to sex, age, etiological factor, affected anatomic region, precedence, seasonal distribution and hospitalization period were collected from medical records and filed in digital spreadsheets. Prior to data collection, a pilot study involving 10% of the final sample, was performed to test the feasibility study and train and calibrate the examiners regarding the criteria used.

The study protocol was reviewed and approved by the Ethics in Research Committee of the University of Cuiabá (protocol number 703.812/2014).

The data statistical analysis was performed using the program SPSS for Windows 21.0 IBM (IBM Corporation, Somers, NY, USA) and the distribution of frequency and association test were included. The statistical significance for the association among the variables was determined by use of the chi-square test. The significance level was $p < 0.05$.

3 Results and Discussion

The analysis involved 346 patients with a history of oral-maxillo-facial fractures, with ages ranging between 3 and 76 years (mean of 30.17 years, a standard deviation of 11.92). The highest frequencies were recorded on the participants from 11-20 years of age ($n=120$; 34.5%), followed by the participants from 31-40 years ($n=95$; 27.4%) and 11-20 years ($n=68$; 19.7%) (Table 1). Out of the total number of analyzed records, 290 (83.8%) were male and 56 (16.2%) of the female sex, being observed a ratio between men and women of 5.17:1.

Table 1 - Distribution of etiological factors ($n=346$) of oral-maxillo-facial fractures according to sex, age and seasonal and weekly distribution

	Etiological Factor							
	Fall	Motorized	Non-motorized	Work	Sport	Animal	Violence	Others
Gender								
Male	19 (5.5%)	132 (38.2%)	14 (4.0%)	15 (4.3%)	8 (2.3%)	19 (5.5%)	61 (17.6%)	22 (6.4%)
Female	6 (1.7%)	37 (10.7%)	4 (1.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (1.2%)	5 (1.4%)
Age								
3 to 10 years	2 (0.6%)	3 (0.9%)	0 (0.0%)	0 (0.0%)	1 (0.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
11 to 20 years	4 (1.2%)	29 (8.4%)	4 (1.2%)	3 (0.9%)	0 (0.0%)	6 (1.7%)	16 (4.6%)	6 (1.7%)
21 to 30 years	7 (2.0%)	65 (18.8%)	8 (2.3%)	5 (1.4%)	5 (1.4%)	7 (2.0%)	16 (4.6%)	7 (2.0%)
31 to 40 years	4 (1.2%)	47 (13.6%)	2 (0.6%)	5 (1.4%)	1 (0.3%)	5 (1.4%)	24 (6.9%)	7 (2.0%)
41 to 50 years	6 (1.7%)	16 (4.6%)	2 (0.6%)	2 (0.6%)	1 (0.3%)	0 (0.0%)	5 (1.4%)	2 (0.6%)
51 to 60 years	1 (0.3%)	7 (2.0%)	1 (0.3%)	0 (0.0%)	0 (0.0%)	1 (0.3%)	2 (0.6%)	3 (0.9%)
≥ 61 years	1 (0.3%)	2 (0.6%)	1 (0.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (0.6%)	1 (0.3%)
Seasonal distribution								
Spring	4 (1.2%)	41 (11.8%)	4 (1.2%)	6 (1.7%)	0 (0.0%)	4 (1.2%)	13 (3.8%)	5 (1.4%)
Summer	9 (2.6%)	31 (9.0%)	2 (0.6%)	4 (1.2%)	3 (0.9%)	1 (0.3%)	18 (5.2%)	2 (0.6%)
Fall	4 (1.2%)	50 (14.5%)	6 (1.7%)	4 (1.2%)	3 (0.9%)	6 (1.7%)	15 (4.3%)	1 (0.3%)
Winter	7 (2.0%)	40 (11.6%)	6 (1.7%)	1 (0.3%)	2 (0.6%)	6 (1.7%)	15 (4.3%)	0 (0.0%)
Missing	1 (0.3%)	7 (2.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (0.6%)	4 (1.2%)	19 (5.5%)

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	Etiological Factor							
	Fall	Motorized	Non-motorized	Work	Sport	Animal	Violence	Others
Weekly Distribution								
Week	18 (5.2%)	93 (26.9%)	13 (3.8%)	10 (2.9%)	4 (1.2%)	9 (2.6%)	34 (9.8%)	6 (1.7%)
Weekend	6 (1.7%)	69 (19.9%)	5 (1.4%)	5 (1.4%)	4 (1.2%)	8 (2.3%)	27 (7.8%)	2 (0.6%)
Missing	1 (0.3%)	7 (2.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (0.6%)	4 (1.2%)	19 (5.5%)

Source: Research data.

Two hundred and fifty-four participants (73.4%) suffered oral-maxillo-facial fracture due to non-intentional causes and 65 (18.8%) due to intentional causes. Motorized transit accident (n=169; 48.9%), violence (n=65; 18.8%) and falls (n=25; 7.2%) were the main etiological causes. There was a variation between genders. Accidents at work (15/15), during sports practice (8/8) and involving animals (19/19) were predominantly related to fractures diagnosed in male patients (Table 1).

Of the 346 serviced patients, 169 (48.8%) were from cities in the interior of the state of Mato Grosso, 143 (41.3%) of the city of Cuiabá, 31 (9.0%) of the city of Várzea Grande and 3 (0.9%) from other States.

The seasonal distribution showed that most of the cases occurred in the fall (March to June) (n=89; 25.8%), followed by the winter (June to September) and spring (September to

December) (n=77; 22.2% each). One hundred and eighty-seven traumatic events (54.1%) were recorded during the week (Table 1).

Overall 508 oral-maxillo-facial fractures were recorded. The lower third of the face was the third most commonly affected (n=276; 54.3%), followed by middle thirds (n=211; 41.6%) and superior (n=21; 4.1%). Zygomatic complex fractures (n=146; 28.7%) and the body of the mandible (n=99; 19.4%) were the most prevalent oral and maxillofacial injuries in the studied sample (Tables 2 and 3). The hospitalization period varied from 1 to 60 days. Most patients remained hospitalized for a period of 1-5 days (n=478; 94.1%). There were no statistically significant differences (p>0.05) among the variables collected from the records of the patients and the occurrence of maxillofacial fractures.

Table 2 - Distribution of oral-maxillo-facial fractures (n=508) in the upper and middle thirds of the face based on sex, age, etiological factor and seasonal and weekly distribution

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	The upper third of the Face		The middle third of the Face							
	Front	Naso-orbito-ethmoid	Arch Zig.	LeFort I	LeFort II	LeFort III	Zig complex.	Nose	Orbit	Lanelong
Gender										
Male	12 (2.4%)	8(1.6%)	3(0.6%)	8(1.6%)	14 (2.8%)	6 (1.2%)	121 (23.8%)	19 (3.7%)	7(1.4%)	2(0.4%)
Female	1(0.2%)	0(0.0%)	0(0.0%)	2(0.4%)	0(0.0%)	0 (0.0%)	25(4.9%)	2(0.4%)	2(0.4%)	0(0.0%)
Age										
3 to 10 years	1 (0.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (0.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
11 to 20 years	3 (0.6%)	2 (0.4%)	1 (0.2%)	0 (0.0%)	1 (0.2%)	1 (0.2%)	22 (4.3%)	5 (1.0%)	2 (0.4%)	0 (0.0%)
21 to 30 years	3 (0.6%)	3 (0.6%)	1 (0.2%)	6 (1.2%)	6 (1.2%)	3 (0.6%)	55 (10.8%)	5 (1.0%)	2 (0.4%)	1 (0.2%)
31 to 40 years	3 (0.6%)	3 (0.6%)	0 (0.0%)	1 (0.2%)	4 (0.8%)	1 (0.2%)	32 (6.3%)	6 (1.2%)	5 (1.0%)	1 (0.2%)
41 to 50 years	2 (0.4%)	0 (0.0%)	1 (0.2%)	2 (0.4%)	2 (0.4%)	0 (0.0%)	25 (4.9%)	3 (0.6%)	0 (0.0%)	0 (0.0%)
51 to 60 years	1 (0.2%)	0 (0.0%)	0 (0.0%)	1 (0.2%)	0 (0.0%)	0 (0.0%)	9 (1.8%)	2 (0.4%)	0 (0.0%)	0 (0.0%)
≥ 61 years	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.2%)	1 (0.2%)	2 (0.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Etiology										
Fall	1 (0.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	11 (2.2%)	5 (1.0%)	0 (0.0%)	0 (0.0%)
Motorized	8 (1.6%)	5 (1.0%)	1 (0.2%)	7 (1.4%)	7 (1.4%)	3 (0.6%)	81 (15.9%)	6 (1.2%)	3 (0.6%)	2 (0.4%)
Non- motorized	0 (0.0%)	1 (0.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	9 (1.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Work	1 (0.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.2%)	9 (1.8%)	2 (0.4%)	2 (0.4%)	0 (0.0%)
Sport	1 (0.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	5 (1.0%)	1 (0.2%)	0 (0.0%)	0 (0.0%)
Animal	0 (0.0%)	1 (0.2%)	0 (0.0%)	0 (0.0%)	1 (0.2%)	2 (0.4%)	6 (1.2%)	0 (0.0%)	1 (0.2%)	0 (0.0%)
Violence	2 (0.4%)	1 (0.2%)	2 (0.4%)	0 (0.0%)	3 (0.6%)	0 (0.0%)	19 (3.7%)	3 (0.6%)	1 (0.2%)	0 (0.0%)
Others	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (0.6%)	3 (0.6%)	0 (0.0%)	6 (1.2%)	4 (0.8%)	2 (0.4%)	0 (0.0%)
Seasonal distribution										

	The upper third of the Face		The middle third of the Face							
	Front	Naso-orbito-ethmoid	Arch Zig.	LeFort I	LeFort II	LeFort III	Zig complex.	Nose	Orbit	Lanelong
Spring	3 (0.6%)	2 (0.4%)	0 (0.0%)	4 (0.8%)	3 (0.6%)	1 (0.2%)	33 (6.5%)	9 (1.8%)	2 (0.4%)	2 (0.4%)
Summer	1 (0.2%)	2 (0.4%)	2 (0.4%)	1 (0.2%)	3 (0.6%)	2 (0.4%)	27 (5.3%)	5 (1.0%)	2 (0.4%)	0 (0.0%)
Fall	3 (0.6%)	4 (0.8%)	0 (0.0%)	5 (1.0%)	3 (0.6%)	0 (0.0%)	36 (7.1%)	3 (0.6%)	0 (0.0%)	0 (0.0%)
Winter	3 (0.6%)	0 (0.0%)	1 (0.2%)	0 (0.0%)	3 (0.6%)	3 (0.6%)	42 (8.3%)	2 (0.4%)	3 (0.6%)	0 (0.0%)
Missing	3 (0.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (0.4%)	0 (0.0%)	8 (1.6%)	2 (0.4%)	2 (0.4%)	0 (0.0%)
Weekly Distribution										
Week	5 (1.0%)	5 (1.0%)	3 (0.6%)	5 (1.0%)	10 (2.0%)	2 (0.4%)	75 (14.8%)	12 (2.4%)	1 (0.2%)	1 (0.2%)
Weekend	5 (1.0%)	3 (0.6%)	0 (0.0%)	5 (1.0%)	2 (0.4%)	4 (0.8%)	63 (12.4%)	7 (1.4%)	6 (1.2%)	1 (0.2%)
Missing	3 (0.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (0.4%)	0 (0.0%)	8 (1.6%)	2 (0.4%)	2 (0.4%)	0 (0.0%)
Zig. - Zygomatic										

Source: Research data.

Table 3 - Distribution of oral-maxillo-facial fractures (n=508) in the lower thirds of the face based on sex, age, etiological factor and seasonal and weekly distribution

	Lower third of the Face						
	Angle	Condylar	Body	Branch	Symphysis	Para symphysis	Coronoid Process
Gender							
Male	36 (7.1%)	40 (7.9%)	83 (16.3%)	5 (1.0%)	26 (5.1%)	44 (8.7%)	1 (0.2%)
Female	7 (1.4%)	7 (1.4%)	16 (3.1%)	0 (0.0%)	3 (0.6%)	8 (1.6%)	0 (0.0%)
Age							
3 to 10 years	0 (0.0%)	0 (0.0%)	3 (0.6%)	0 (0.0%)	1 (0.2%)	1 (0.2%)	0 (0.0%)
11 to 20 years	11 (2.2%)	7 (1.4%)	22 (4.3%)	0 (0.0%)	8 (1.6%)	9 (1.8%)	0 (0.0%)
21 to 30 years	18 (3.5%)	18 (3.5%)	32 (6.3%)	0 (0.0%)	10 (2.0%)	17 (3.3%)	0 (0.0%)
31 to 40 years	10 (2.0%)	16 (3.1%)	22 (4.3%)	2 (0.4%)	8 (1.6%)	20 (3.9%)	0 (0.0%)
41 to 50 years	2 (0.4%)	3 (0.6%)	8 (1.6%)	1 (0.2%)	2 (0.4%)	4 (0.8%)	0 (0.0%)
51 to 60 years	2 (0.4%)	3 (0.6%)	6 (1.2%)	2 (0.4%)	0 (0.0%)	1 (0.2%)	1 (0.2%)
≥ 61 years	0 (0.0%)	0 (0.0%)	6 (1.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Etiology							
Fall	2 (0.4%)	1 (0.2%)	5 (1.0%)	0 (0.0%)	3 (0.6%)	4 (0.8%)	0 (0.0%)
Motorized	14 (2.8%)	31 (6.1%)	45 (8.9%)	0 (0.0%)	17 (3.3%)	29 (5.7%)	0 (0.0%)
Non- motorized	2 (0.4%)	3 (0.6%)	3 (0.6%)	1 (0.2%)	3 (0.6%)	3 (0.6%)	0 (0.0%)
Work	2 (0.4%)	0 (0.0%)	6 (1.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Sport	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.2%)	0 (0.0%)
Animal	1 (0.2%)	1 (0.2%)	7 (1.4%)	1 (0.2%)	0 (0.0%)	1 (0.2%)	1 (0.2%)
Violence	14 (2.8%)	9 (1.8%)	27 (5.3%)	2 (0.4%)	3 (0.6%)	12 (2.4%)	0 (0.0%)
Others	8 (1.6%)	2 (0.4%)	6 (1.2%)	1 (0.2%)	3 (0.6%)	2 (0.4%)	0 (0.0%)
Seasonal distribution							
Spring	8 (1.6%)	12 (2.4%)	18 (3.5%)	1 (0.2%)	5 (1.0%)	10 (2.0%)	1 (0.2%)
Summer	9 (1.8%)	9 (1.8%)	17 (3.3%)	1 (0.2%)	7 (1.4%)	9 (1.8%)	0 (0.0%)
Fall	11 (2.2%)	15 (3.0%)	34 (6.7%)	1 (0.2%)	9 (1.8%)	18 (3.5%)	0 (0.0%)
Winter	10 (2.0%)	9 (1.8%)	21 (4.1%)	1 (0.2%)	4 (0.8%)	11 (2.2%)	0 (0.0%)
Missing	5 (1.0%)	2 (0.4%)	9 (1.8%)	1 (0.2%)	4 (0.8%)	4 (0.8%)	0 (0.0%)
Weekly Distribution							
Week	26 (5.1%)	26 (5.1%)	52 (10.2%)	4 (0.8%)	16 (3.1%)	31 (6.1%)	1 (0.2%)
Weekend	12 (2.4%)	19 (3.7%)	38 (7.5%)	0 (0.0%)	9 (1.8%)	17 (3.3%)	0 (0.0%)
Missing	5 (1.0%)	2 (0.4%)	9 (1.8%)	1 (0.2%)	4 (0.8%)	4 (0.8%)	0 (0.0%)

Source: Research data.

The epidemiological knowledge contributes with valuable information in public health, which associated with clinical and laboratory investigations allows a set of

essential observations to all segments of science^{33,34}. The analysis of the epidemiological profile of a given disease in different populations is required for the establishment of

comparisons, moreover, allows the monitoring of health status, the observation of trends, the planning of health services and prevention programs, serving as a basis for future investigations^{10,12,25,35}.

The epidemiological analysis developed in the present study was retrospective, based on the verification of records of patients with oral-maxillo-facial fractures and treated in the Department of Maxillofacial Surgery and Traumatology (CTBMF) of the General University Hospital (HGU) from Cuiabá-MT, between December 2001 and June 2014. The Service of CTBMF of HGU offers medium and high complexity medical care, being considered as a reference, in the treatment of patients with oral-maxillo-facial fractures. The population attended in the service comes sectors with low socioeconomic level.

Retrospective studies are relatively easy and economical to be conducted, constituting a viable source for the establishment of hypothesis³³. However, they present as the main restriction the impossibility of establishing temporal nexus, needed for the proof of cause and effect, since both are collected at the same time³⁴. Furthermore, the quality of the information depends on the accuracy with which the initial examination is performed, and the correct filling out of the clinical records. Thus, when some examination or information may no longer be raised during the anamnesis or are not recorded in the medical records, the final result of this study is affected⁴.

From the epidemiological point of view, the results of this study are in agreement with the data presented previously on Oral and Maxillofacial injuries^{1,5,3,11,12,19,21,24,27,36}. Males suffered more significantly Oral and Maxillofacial injuries than females, at a ratio of 5.17:1. This finding is associated to the results obtained by Jin *et al.*³ and Chrcanovic *et al.*¹² when proportions between men and women were observed of 4.6:1 and 5.4:1, respectively. However, Al Ahmed *et al.*¹, Cavalcanti *et al.*¹¹ and Motamedi¹⁹ found higher relations recorded in the present study, 11:1, 8.1:1 and 8.6:1, respectively. In general, men are more involved in traffic accidents, acts of violence and tend to develop sports activities of greater physical contact, without the use of adequate protection^{15,20}.

In the present study, the age of patients with a history of fracture ranged from 3 to 76 years. High prevalence was observed in groups of 11-20 and 31-40 years, which together accounted for approximately 61.9% of the sample, which is in agreement with other studies^{2,11,19-21,24,32}. A possible explanation is related to the fact that adults and young adults have a higher social activity than children, people of middle age and elderly. In other words, individuals belonging to the second and third decades of life participate with greater frequency of sports practice taken as dangerous, drive motorized vehicles carelessly, ingest a larger quantity of alcoholic drink and are more likely to engage in acts of violence^{11,12,14}.

Epidemiological surveys conducted in different countries suggest the motorized traffic accident as the most important etiological factor of Oral and Maxillofacial injuries^{2,14,21,25,26}.

Most of the fractures observed in the sample studied here, occurred due to unintentional factors (73.4%), with emphasis on the motorized traffic accident (48.9%). It has been emphasized that the place where the study was conducted, and the age group involved in the sample should receive appropriate consideration during the analysis of the etiological factor of oral-maxillo-facial fractures^{12,24}.

Regarding the seasonal distribution, the results showed that most of the cases occurred in the fall (n=89; 25.8%), winter and spring (n=77; 22.2% each). Scartezini *et al.*⁴ studied the prevalence of oral maxillofacial injuries in patients treated at the Hospital for urgencies of Aparecida de Goiânia. The authors observed high number of traumas in the fall (38.0%) and summer (34.0%). Scariot *et al.*⁹ assessed the epidemiological aspects of Maxillofacial injuries in a sample of 103 patients with ages ranging between 0 and 18 years in the city of Curitiba and observed a greater occurrence of lesions in the summer (28.1%) and fall (26.2%). Chrcanovic *et al.*²⁰ analyzed 911 medical records of patients presenting facial fractures treated in a public hospital in Belo Horizonte and observed a high number of visits on the weekends, especially in the spring. Studies carried out in Austria and in the United Kingdom⁸ observed a high prevalence of Oral and Maxillofacial injuries in the summer. It is prudent to highlight that Brazil is a tropical country, where drastic changes of temperature are not observed, in most regions, during the year. This means that all four seasons of the year are not well defined, therefore, the establishment of comparisons among studies conducted in different geographical areas of Brazil and among studies conducted in other countries should be established with care⁴.

The lower third of the face was the most commonly affected region (n=276; 54.3%). However, the fracture of the zygomatic complex was the most prevalent traumatic injury (n=146;28.7). This finding is similar to the results obtained in the studies developed by Leles *et al.*³¹ and Pereira *et al.*³² both in Brazil, Holmes *et al.*³⁷ in the USA and Roccia *et al.*³⁵ in Italy, who also observed a high number of fractures of the zygomatic complex and contrasts with the observations of Motamedi¹⁹ in Iran, Brazilian and Passeri² in Brazil and Jin *et al.*³ in China, who detected a high incidence of fractures in the jaw. Depending on the causative factor, oral-maxillo-facial injuries of different patterns can be recorded. Fractures of the nasal bones and the zygomatic complex tend to occur with greater frequency after traffic accidents and acts of violence^{31,37}.

The lack of epidemiological data on oral-maxillo-facial fractures in various geographical regions of Brazil motivated this study, which aimed to collect information on several factors related to this type of disorder in a University Hospital, located in Cuiabá-MT. Such information, certainly, will assist in the development of prevention policies and adoption of clinical decisions with better defined therapeutic protocols.

Future prospective studies, based on the follow-up of these patients, with a view to evaluation of therapeutic protocols and their implications need to be developed. At the moment the best prognosis signals for the implementation of preventive campaigns as a viable, functional and operational alternative, regardless of gender, age, social class, etc.

4 Conclusion

Based on the methodology in this case it is prudent to conclude that:

The prevalence and patterns of oral-maxillo-facial fractures in the Bucco maxillofacial Surgery and Traumatology of the General University Hospital of Cuiabá-MT are similar to those observed in studies conducted in other populations. When it is verified:

A high number of injuries in male individuals below the age of 40 years, from municipalities in the interior of the state, resulting from motorized traffic accidents and involving mainly the lower third of the face.

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