

Epidemiological profile of cases of oral and maxillofacial trauma in patients assisted in a hospital in the north of Piauí: a 5-year retrospective study

Perfil epidemiológico dos casos de traumas bucomaxilofaciais de pacientes atendidos em um hospital ao norte do Piauí: um estudo retrospectivo de 5 anos

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ABSTRACT

Objective: This study aimed to outline the socio-epidemiological profile of patients with facial fractures treated at a state hospital in a medium-sized city in northeastern Brazil. **Methods:** The medical records of patients who suffered facial trauma treated

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at the hospital in question in the last five years (2018-2022) were evaluated. **Results:** In 2021, the highest number of cases were recorded. There was a male predominance (81.00%), the average age was 35.13. The maxillary zygomatic orbit complex was the most affected bone, which represented 28.00%, with motorcycle accidents as the main etiology, osteosynthesis of the maxillary zygomatic orbit complex the most used means of treatment, and Parnaíba the city with the most patients. **Conclusion:** It is noticed that young adults were more affected, with motorcycle accidents as the main etiology. In this way, oral and maxillofacial trauma could be avoided with the increase of more educational measures in traffic and greater punishment for reckless drivers.

Indexing terms: Facial bones. Epidemiology. Traumatology.

RESUMO

Objetivo: Este estudo teve como objetivo traçar o perfil sócio epidemiológico de pacientes com fraturas faciais atendidos em um hospital estadual de uma cidade de médio porte do Nordeste do Brasil. **Métodos:** Foram avaliados os prontuários de pacientes que sofreram traumas faciais atendidos pelo hospital em questão nos últimos cinco anos (2018-2022). **Resultados:** No ano de 2021 foram registrados os maiores número de casos. Observou-se uma predominância masculina (81,00%), a média da idade foi 35,13. O complexo órbita zigomático maxilar foi o osso mais afetado, o que representou 28,00%, tendo os acidentes motociclísticos como principal etiologia, osteossíntese do complexo órbita zigomático maxilar o meio de tratamento mais empregado, e Parnaíba a cidade com mais pacientes. **Conclusão:** Percebe-se que os adultos jovens foram mais afetados, tendo como etiologia principal os acidentes motociclísticos. Dessa maneira, os traumas bucomaxilofacial poderiam ser evitadas com o incremento de mais medidas educativas no trânsito e uma maior punição aos motoristas imprudentes.

Termos de indexação: Ossos da face. Epidemiologia. Traumatologia.

INTRODUCTION

Oral and maxillofacial traumas have a high prevalence in the population and can occur isolated or concomitantly with other bodily injuries, in addition to being or not associated with polytrauma [1] Trauma to the facial region regularly results in injuries to soft tissues, teeth and the main constituents of the facial skeleton [2].

Trauma in general and facial trauma in particular increased in frequency during the recent years and constitute a challenge for multidisciplinary teams working in the area urgency regarding its initial management and a problem for oral and maxillofacial surgeons who work in this area. Every professional who comes across these patients must have the necessary knowledge of clinical assessment, image studies, initial treatment and ability to carry out adequate prioritization of cases [3].

Facial fractures have a variable incidence according to age, gender, geographic location, cultural aspects, socioeconomic status, influence of climate and weather, use of alcohol and illicit drugs, variation in traffic laws, domestic violence, pathologies bone and etiological factors [4]. There are social determinants linked to the epidemiology of some of these traumas, however, the etiology of facial trauma is divergent and the greater predominance or minor of an etiological factor is directly related to the region studied [2]. However, the etiology tends to be constant between studies, with traffic accidents, falls, violence, sports injuries and workplace injuries [5].

The greatest occurrence occurs among men, mainly due to the more aggressive and careless personality in traffic, among the types of vehicles involved in accidents, motorcycles have caused a large

number of traffic deaths, mainly due to the fact that it is a means of transport that does not guarantee the safety of the driver, leading to multiple traumas. Furthermore, incorrect use of personal protective equipment, particularly the helmet, can cause serious injuries to the victims' face [4]. And in addition to this, the disrespect for speed limit laws, the use of drugs and alcoholic beverages (8) which I related to the occurrence of land transport accidents (ATT), and also the fact that, the number of vehicles in cities has increased, placing a greater number of people in a risk [6].

Oral and maxillofacial surgery is a specialty of dentistry that presents among its activities are the repair of traumas and fractures in the bones of the face, these being some of the leading causes of death and morbidity in the world [7]. Depending on the severity, treatment of traumatized patients require multidisciplinary and integrated care, in addition, the facial trauma may be accompanied by other types of serious injuries, which may result in emotional and psychological problems that require lifelong monitoring [4]. In this way, Given the above, the epidemiology of facial trauma provided support for the development of preventive measures and the development of primary intervention, which will help reduce these injuries.

Therefore, the stimulus for deciding on this topic results from the clinical challenge that these injuries represent as a result of high prevalence, high morbidity and aesthetic, functional and psychosocial repercussions. Treatment of injuries and rehabilitation of patients result in high costs for public health services, and the identification of Trauma epidemiology allows us to define population groups more susceptible to trauma, check trends, plan and evaluate public health policies and preventive measures and furthermore, it enables the qualification of services and professional training.

In this context, this study aimed primarily to profile epidemiological analysis of patients with facial fractures treated at a state hospital in a medium-sized city in the Northeast of Brazil and, secondarily, present the etiology well as the means of surgical treatment of facial fractures and thus facilitate the implementation public policies to reduce this demand.

METHODS

The present study was a field research of the descriptive type, with qualitative approach [8].

The research was carried out in the municipality of *Parnaíba*, in the State of *Piauí*, located in the territory of the Coastal Plain 337.7 km away, to the north, of the capital Teresina. The collection of data was performed in the Medical and Statistical Archiving Sector (SAME), of the Hospital State Dirceu *Arcoverde* (HEDA), after the approval of the ethics committee of the University Federal of the *Parnaíba* Delta (UFDPAR), with the opinion number: 5.619.985 and also after consent by means of a Letter of Authorization from the Co-Participating Institution. The medical records of patients who suffered facial trauma were evaluated attended by the hospital in question. For data collection, the medical records of patients seen in the last five years (2018-2022).

Patients who suffered facial trauma, attended in the referred hospital occurred within the pre-established time frame and those patients who were served within the limits of the municipality in question. In addition, documents with reliable sources and accurate data of all documents containing complete data of registration of care in the oral and maxillary sector requested to the HEDA.

Patients who presented some type of comorbidity that could cause bias in the research, the medical records that are the target of lawsuits that They run in secrecy of justice, in addition to the medical records that did not report the facial thirds or the affected bones, as well as those that did not present the means of treatment employed, and exclusively dental fractures.

The present research presented possible risks, such as the psychological: modification in emotions, stress and guilt. Therefore, the data that were produced in a place that guaranteed anonymity, secrecy and privacy and reduced the possibility of the above-mentioned risks. The researchers have committed to providing immediate assistance, as well as being responsible for the integral assistance to the participant of the research, with regard to the damages resulting from the research.

The research contributed to the understanding of the epidemiological profile of the consultations performed in patients with facial trauma, performed by the Hospital in the city of question.

This research followed all the legal ethical principles set forth in the Resolution 466/12 and Resolution 580/18 of the National Health Council (CNS), stating that the research participants, as well as the data that were collected, through the data collection will not be revealed in an inappropriate manner, in addition to which the data will be preserved by the responsible researcher in a safe place, for a period of 5 years, in the collection private library of Christus Faculdade do Piauí (CHRISFAPI), and will only be used for the research in question [9, 10].

For this analysis, we used the type of outcome associated with the therapeutic approach Applied. The level of significance adopted will be 5%. Microsoft Excel was used to organization of the findings, which will later be expressed in tables and tables for a better discussion of the mathematical correlations between the results.

RESULTS

Of the 446 patients with maxillofacial trauma, 148 were registered in the year 2021, followed by 139 in the year 2022, 74 in the year 2020, 46 in the year 2019 and 39 in the year 2018 (figure 1). Regarding gender distribution, 362 (81.00%) were male and only 84 (19.00%) were female. The mean age was 35.13 with a standard deviation of 14.25. The municipalities of greater origin were divided into 6 groups: *Parnaíba*, *Piripiri*, *Cocal*, *Esperantina*, *Luzilândia* and others, and the municipality with the highest occurrences of cases was *Parnaíba* with 121 (27.00%), followed by others with 224 (50.00%), *Piripiri* with 35 (8.00%), *Cocal* with 26 (6.00%), *Esperantina* 22 (5.00%) and *Luzilândia* 18 (4.00%) (table 1).

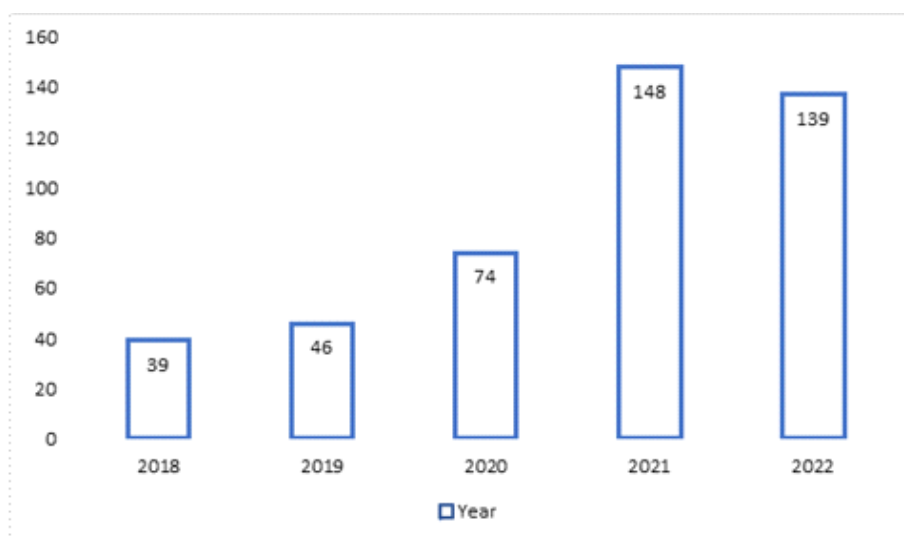


Figure 1. Statement of the number of patients with maxillofacial trauma treated in the service included in the study. *Parnaíba* (PI), Brazil.

Table 1. Sociodemographic statement (gender, age and municipality of origin) of the sample included in the study. *Parnaíba* (PI), Brazil.

Variable	Mean	Standard Deviation	Absolute Frequency (n)	Relative Frequency (%)
Age	35,13	14,25	-	-
Gender				
Male			362	81
Female			84	19
Place of Origin				
Parnaíba			121	27
Piripiri			35	8
Cocal			26	6
Esperantina			22	5
Luzilândia			18	4
Others			224	50

The etiologic agents were divided into six groups: motorcycle accidents, car accidents, interpersonal violence, sports accidents, domestic accidents and others. It was found that the main etiological factor of facial trauma was the accident motorcyclists accounted for 318 (71.0%) of the cases, followed by another 84 (19.0%). The Interpersonal violence occupies the third position of etiological factors for both sexes 24 (5.8%), followed by car accidents 16 (4.0%) (table 2).

Table 2. Statement of the causes of fractures according to sample data collection included in the study. *Parnaíba* (PI), Brazil.

Variable	Absolute Frequency (n)	Relative Frequency (%)
<i>Fracture Causes</i>		
Motorcycle Accident	318	71,0
Car Accident	16	4,0
Interpersonal Violence	24	5,1
Sports Injury	3	0,7
Household Accidents	1	0,2
Others	84	19,0
Total	446	100,0

Regarding maxillofacial fractures, there were a total of 446 cases, and They were classified as: mandible, maxilla, nasal bones, zygomatic, orbit complex maxillary zygomatic (OZM), which comprises the region that is formed by the zygoma or bone zygomatic, malar and maxillary bones, mandibular condyle, orbit, le fort I, and finally, multiple Skull and face fractures. The distribution of fractures is shown in table 3. It was observed that some of the victims had multiple trauma, a condition that aggravating the patient’s general health condition.

Table 3. Statement of fractured sites according to sample data collection included in the study. *Parnaíba* (PI), Brazil.

Variable	Absolute Frequency (n)	Relative Frequency (%)
<i>Fracture Location</i>		
Mandible	93	21,0
Maxilla	13	3,0
Nasal Bones	64	14,3
Zygomatic	39	9,0
OZM complex	125	28,0
Zygomaticomaxillary Bones	73	16,0
Mandibular Condyle	17	4,0
Orbit	14	3,1
Le Fort I	5	1,00
Multiple Craniofacial Fractures	3	0,6
Total	446	100,0

The patients were also evaluated regarding the conduct adopted to treat the trauma (figure 2). The most common fracture was in the region of the OZM complex, in 125 (28.0%) of the in this case, the most commonly used means of treatment was fracture osteosynthesis of the OZM complex, representing the absolute value of 216 of the cases.

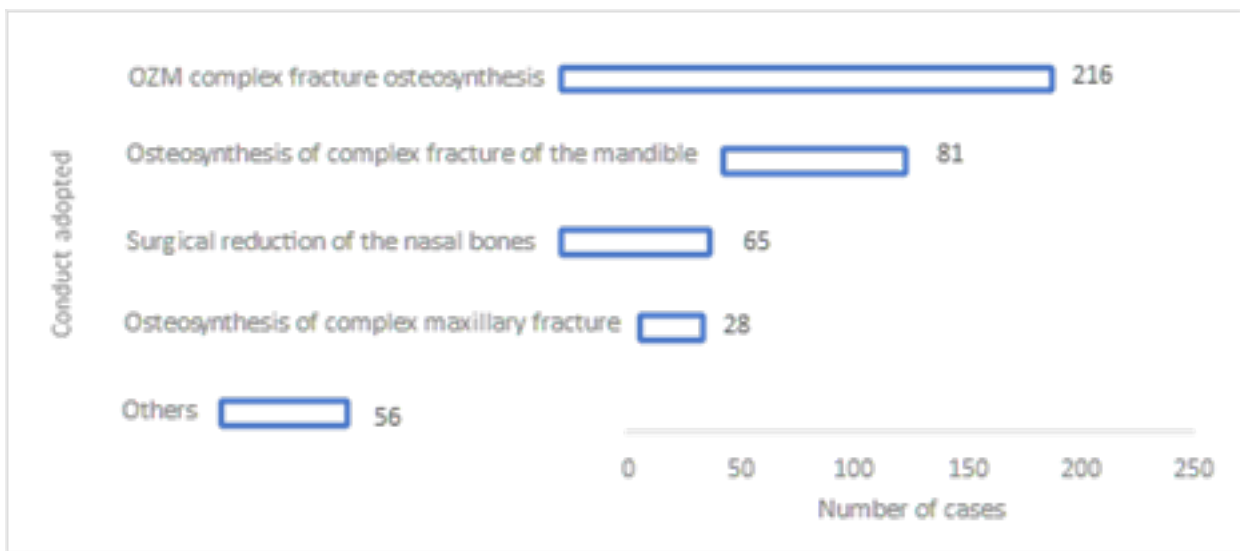


Figure 2. Statement of the procedures adopted in relation to the fractures mentioned in the attendance forms. *Parnaíba* (PI), Brazil. N = 446.

DISCUSSION

Epidemiological studies vary according to geographic region, density population, socioeconomic level and regional governance, as well as by period and type of establishment where the study was conducted [5]. A comparison of the data requires that these factors are considered.

According to the Pan American Health Organization (PAHO), Brazil spends 4% to 7% of its health budget in the context of mortality and treatment of diseases arising from external causes, such as facial trauma. The importance given to facial injuries focuses on discharge incidence of morbidity, aesthetic disfigurement, loss of function and financial cost representative, in addition to causing emotional repercussions and the possibility of deformities irreversible [2].

According to the data obtained, the years 2021 and 2022 presented the highest Fracture occurrence rates, added together, represented the absolute value of 287 of the cases. This time interval is part of the context of the Covid-19 pandemic, such an index possibly linked to the relaxation of restrictive measures imposed in this period pandemic, corroborating with other studies that have reported, a frequency of accidents significantly lower throughout the course of the pandemic, while also pointed to a higher occurrence of accidents during the later stage due to the relaxation of isolation measures [11].

Regarding the origin of the patients attended, the vast majority came from the city of Parnaíba, revealing an index of 27.0% of the total number of cases. According to data of the IBGE (2020), it has about 183,482 thousand inhabitants, where the research hospital.

To establish the epidemiological profile of facial fractures treated in the Surgery Service and Oral and Maxillofacial Traumatology of the Hospital, allowed quantifying and clarifying the various levels of complexity of facial trauma. The main cause of fractures in this hospital were the motorcycle accidents (71.00%), these results are consistent with those of other studies found in the literature [1, 4, 12].

There was a predominance of males in 81.0% of the cases, this factor may be explained by the more intense participation of man in society, with greater exposure to risk factors such as recklessness in traffic [3]. In Brazil, the number of traffic accidents fatal motorcycles have increased by 754% in a decade and continue to increase every year [6].

In addition, although not evaluated in this study, alcohol consumption is an aspect to be considered in the etiology of facial fractures, and may be involved in accidents of transit. In many cases, patients attribute the fracture to an accidental fall, omitting the alcohol consumption, which makes it difficult to verify the involvement of alcoholic beverages in the cases of fractures. Regarding the age group, there was a higher prevalence of young adults, corroborating with other studies that indicate a higher prevalence for the third decade of life [2].

The importance of identifying and analyzing the lesion site is related to kinematics of the trauma suffered, the severity of the injury and the treatment that will be established, the Middle third is the region of the face most affected by trauma due to its position prominent and central.1 In this study, the most common fracture was in the OZM complex corresponding to 28.0% of the cases, as well as data found in the literature [5, 13]. In Other studies point to the mandible as the most affected region, because it is the single mobile bone of the face becoming more vulnerable to impacts and traumas [6, 14, 15].

It is important to emphasize the importance of the performance of the oral and maxillofacial surgeon in hospital environment, being essential in the recovery of patients victims of facial injuries, a since the growth in the number of cases of this problem brought with it the need for implementation of protocols that establish efficient forms of treatment [7]. With regard to to the conduct adopted to treat traumas, the treatment depends on the oral and maxillofacial surgeon, of the type and mechanism of the fracture [16]. We see that in the hospital in question there was a predominance in osteosynthesis of the maxillary zygomatic orbital complex with absolute value of 216 of the total cases, due to the majority of fractures being in the orbit complex maxillary zygomatic.

The limitations of retrospective studies are well known and include biases of selection and inaccuracies in clinical records.¹⁶ Although we have tried to control for the bias of selection carefully defining the inclusion and exclusion criteria, the clinical records incomplete data are a challenge and some were excluded from this study since data obviously not reported could not be included. Also, the storage and system of information from the hospital of the study are obsolete, since the medical records are in paper forms and are stored on shelves separated by year and month of attendance, in addition to being organized along with medical records of other specialties surgical, which made it difficult to obtain and understand the necessary data, but not an impeding factor for conducting the research.

Allied to this, it was also not possible to deeply explore the data sociodemographic of the victims, since information such as ethnicity, education, profession, income are not provided by the medical record, making it difficult to relate the theme to a larger socioeconomic vulnerability, suggesting that further studies be conducted considering these factors.

The findings allowed us to measure the magnitude of the events in the studied region, generating information to support the creation of population awareness programs, social support, epidemiological surveillance actions, reorientation of care practices to victims of facial trauma, in addition to improving or creating new policies to prevent accidents motorcycles that were the most important etiological factors found, and evaluate the results of the application of new public health policies.

CONCLUSION

Through epidemiological analysis of the results, it was observed that men were those most affected by facial fractures, with the most incident age group being adults young people with more active lives and more exposed to risks, with the years 2021 and 2022 being the period in which most accidents occurred. The OZM complex was the most traumatized region, with motorcycle accidents being the most common etiology, and the most commonly used treatment to treat the fractures was osteosynthesis of the OZM complex. We therefore conclude that there is a clear and evident need for greater encouragement on the part of the competent authorities in actions to prevent traffic accidents, use of seat belts and helmets in order to reduce trauma, especially facial trauma resulting from accidents. New studies with greater sample number and a longer follow-up period are necessary to provide more accurate epidemiological data, assisting in the implementation of policies public programs to prevent orofacial trauma.

Collaborators

AC Farias, conceptualization; data curation; investigation; methodology; writing - original draft. CBC Brito, conceptualization; data curation; investigation; methodology; writing - original draft. AMC Neto, conceptualization; data curation; investigation; methodology. ES Leal, conceptualization; data curation; investigation; methodology. LPS Dias, conceptualization; data curation; investigation; methodology. ES Leal conceptualization; data curation; investigation; methodology. RMI Coelho, conceptualization; data curation; investigation; methodology; project administration; writing - original draft.

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