

EPIDEMIOLOGICAL PROFILE OF PATIENTS WITH FACIAL INJURIES TREATED IN AN EMERGENCY HOSPITAL

PERFIL EPIDEMIOLÓGICO DE PACIENTES COM TRAUMATISMOS FACIAIS ATENDIDOS EM EMERGÊNCIA HOSPITALAR

PERFIL EPIDEMIOLÓGICO DE PACIENTES CON TRAUMATISMOS FACIALES ATENDIDOS EN LOS SERVICIOS DE EMERGENCIAS

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ABSTRACT

This research aimed to identify the characteristics of patients suffering from craniofacial trauma seen in the emergency unit of a teaching hospital in the state of São Paulo. Treatment is a retrospective, descriptive and analytical study with a quantitative approach. Data were obtained from medical records, in the period from 2011 to 2014. The sample consisted of 867 patients. The characteristics of the study population showed that 60.9% were male, 66.8% were aged 0-20 years old, 87% were white, 55.5% were in the city of São José do Rio Preto, 79.6% were inactive, 84.8% had no partner and 52.7% level of education were illiterate. Studies in North America show that falls are the leading cause of non-fatal injuries to children and adolescents up to 19 years old. The higher incidence of trauma was the falling with 74.1%, the craniofacial trauma with 75.7% and more frequent when compared to facial trauma with 24.2%. The occurrence of exams was 19.7%, dressings with 6.5%, 6.3% suture, 23.9% medication and 0.7% surgical procedures. It is concluded that the facial trauma were more common in the age group between 21 and 60 years old, active patients, with a partner and higher education. The main causes were physical aggression, syncope/seizure. The craniofacial trauma was more frequent between the ages of 0 and 20 years old and with more than 60 years old, retired, unmarried and illiterate, with the fall as the leading cause.

Keywords: Emergency Service, Hospital; Health Profile; Patients; Facial Injuries.

RESUMO

Esta pesquisa objetivou identificar as características de pacientes vítimas de traumas craniofaciais atendidos em unidade de urgência e emergência de um hospital de ensino do interior do estado de São Paulo. Trata-se de um estudo retrospectivo, descritivo e analítico, de abordagem quantitativa. Os dados foram obtidos em prontuários, no período de 2011 a 2014. A amostra foi composta de 867 pacientes. As características da população estudada revelaram que 60,9% eram do sexo masculino, 66,8% estavam na faixa etária de 0-20 anos, 87% eram brancos, 55,5% eram do município de São José do Rio Preto, 79,6% eram inativos, 84,8% não tinham companheiro e, quanto ao grau de instrução, 52,7% não eram alfabetizados. Estudos na América do Norte informam que as quedas são a principal causa de lesões não fatais para crianças e adolescentes até 19 anos. A maior ocorrência dos traumas foi por queda, com 74,1%, o trauma de craniofacial foi de 75,7% e mais frequente quando comparado ao trauma facial 24,2%. A ocorrência de exames foi de 19,7%, curativos de 6,5%, sutura de 6,3%, medicação de 23,9% e procedimentos cirúrgicos de 0,7%. Concluiu-se que os traumas de face foram mais comuns na faixa etária entre 21 e 60 anos, pacientes ativos, com companheiro e ensino de nível superior. As principais causas foram agressão física, síncope/convulsão. Já os traumas craniofaciais foram mais frequentes na faixa etária entre 0 e 20 anos e com mais de 60 anos, inativos, sem companheiro e não alfabetizados.

Palavras-chave: Serviço Hospitalar de Emergência; Perfil de Saúde; Pacientes; Traumatismos Faciais.

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RESUMEN

El objetivo del presente estudio fue identificar las características de los pacientes víctimas de traumatismo craneofacial atendidos en los servicios de emergencias de un hospital universitario del estado de San Pablo. Se trata de un estudio retrospectivo, descriptivo y analítico con enfoque cuantitativo. Los datos se obtuvieron de los registros médicos, en el período 2011 a 2014. La muestra consistió en 867 pacientes. El estudio mostró que 60,9% eran varones, 66,8% tenían entre 0-20 años, 87% eran blancos, el 55,5% eran de la ciudad de São José de Rio Preto, 79, 6% eran inactivos, el 84,8% no tenía pareja y 52,7% eran analfabetos. Estudios realizados en Norteamérica muestran que la causa principal de lesiones no mortales entre niños y adolescentes de hasta 19 años son las caídas. La mayor incidencia de los traumas fue por caídas, con 74,1%, trauma craneofacial 75,7% y trauma facial 24,2%. La realización de exámenes fue de 19,7%, curativos 6,5%, suturas 6,3%, medicación 23,9% y procedimientos quirúrgicos 0,7%. Llegamos a la conclusión que los traumas faciales fueron más frecuentes en el grupo de edad entre 21 y 60 años, en pacientes activos, con pareja y educación superior. Las principales causas fueron agresión física, síncope / convulsión. Los traumas craneofaciales fueron más frecuentes entre 0 y 20 años y entre las personas mayores de 60 años, inactivas, sin pareja y analfabetas.

Palabras clave: Servicio de Urgencia en Hospital; Perfil de Salud; Pacientes; Traumatismos Faciales.

INTRODUCTION

Trauma is defined as an entity characterized by structural or physiological changes induced by an imbalance of body energy exchange between the tissues and the environment.¹ Victims of trauma can last for weeks, months or even years in rehabilitation and physiotherapy services. When they do not receive the necessary care, they can be with consequences that lead to difficulties in social interaction, failure at work, deformities and emotional problems.^{2,3}

Every day, about 16,000 people die from some trauma, and facial trauma is one of the most prevalent, accounting for half of the deaths. This fact can be explained by the trauma kinematics, as the skin and the bones of the face are extremely exposed to aggression because of their previous body projection.⁴⁻⁶ The social impact is important because, among many deaths, some of them survive and usually have sequels with a strong influence on activities of daily living, either by prolonged rehabilitation, whether by aesthetic changes of the face and may have permanent limitation. In this context, there is also the economic impact, with the increase of hospital, personal and family expenses, from the treatment and rehabilitation. It also promotes a very large deficit of manpower and high costs for the government.^{7,8}

The national epidemiology shows that, concerning gender, 85% of maxillofacial trauma occurs in men, and 36% are aged between 26 and 40 years old. Regarding the etiology of trauma, 35% are represented by car accidents. An international study showed a prevalence of 16.4% of facial trauma, mostly male. On traumas studied, 44.3% were classified as severe facial poly-trauma. Most accidents occurred at night, and there were a higher number of facial injuries in car accidents, compared to accidents with motorcycles, being related to the mechanism of trauma.⁹

Craniofacial trauma can be defined by local lesions in the face region, when there is an anatomical disruption of tissue integrity, and can be represented by soft or hard tissues injury. These injuries have a peculiar feature: a significant variety of lesions ranging up to several types of tissues such as soft tissues,

bones, teeth and the scalp. When receiving external aggression forces, the soft tissues are compressed between the bones, causing various kinds of injuries such as bruises, fractures, hemorrhage, among others.^{3,4,7} The most common causes are car accidents, personal injuries and falls.¹⁰

The type and size of a craniofacial fracture are differentiated according to the direction of the force, the impact and also the local anatomy. Facial fractures can be classified according to the more structural bone fragility regions, such as the Le Fort classification. Le Fort I Classification indicates horizontal fracture of the jaw. The Le Fort II is characterized by pyramidal fracture jaw with nasal and maxillary bones fractures. Patients with this type of fracture may present complications such as excessive bleeding, cerebrospinal fluid drainage and airway obstruction by teeth or tooth fragments. Le Fort II Classification, also known as craniofacial disjunction, generates the complete separation of the facial bones of skull ligaments, and it is usually associated with multiple fractures of facial bones. Victims may have the same complications of Le Fort type II fractures.¹¹

In addition to the long-term consequences, facial trauma also reports immediate implications. These implications are related to the impairment of the upper airways. After the trauma, excessive bleeding, swelling, drainage of cerebrospinal fluid, teeth, and tooth fragments can cause obstruction or physiological changes in the airways, hindering the ventilation. Thus, a trauma care is necessary with a protocol aimed at the safety and integrity of the victim. The advanced life support in trauma (ATLS) constitutes the standard of care for polytrauma. Its main objective aimed at the evaluation and treatment of multiple lesions simultaneously. It is based on identification and secure management of all injuries, prioritizing those that are life-threatening, such as blocking the airways.¹²

The mechanism of injury is relevant for the lesions that can be found. Thus, in car accidents, this mechanism is described mainly by the frontal impact, with serious cinematic. The victim is located in the car windshield, allowing the occur-

rence of severe facial injuries, especially when not using a seat belt. Facial injuries in the fall mainly occur in children and the elderly, related to its kinematics and physical and physiological issues of the victims. As for the injuries caused by violence or car accidents, they occur mainly in young adults. When there is violence, the aggressors usually target the mandible and the zygomatic bone, mainly due to higher prominence in the anatomy of the face.^{8,13}

The nursing team plays a fundamental role in assisting the victim of facial trauma. Studies and updates are needed about the comprehensive care to develop the systematization of nursing care. One way to build specific knowledge is the search and definition of the characteristics of trauma, patients, and care, enabling the construction of knowledge with scientific reasoning. Such studies need to be developed in nursing so that the findings can provide appropriate knowledge to support prevention efforts and security assistance.¹⁴

Considering the diversity of the factors associated with facial trauma, the objective of this study was to identify the epidemiological profile of patients suffering from facial and craniofacial injuries treated at an emergency unit of a teaching hospital.

METHODOLOGY

This is a retrospective, descriptive, analytical study with a quantitative approach (univariate and multivariate). It seeks to describe the main characteristics of patients with facial trauma from demographic, clinical and treatment data carried out to scientifically demonstrate the health care planning.¹⁵

Data collection was conducted on the electronic patient record, collecting information from the computerized system MV2000. Data were obtained by filling out a form made by the authors, with the information necessary for the fulfillment of the objectives. During the data collection, it was found that in many records there was no information to complete the questionnaire. The sample consisted of 867 records and, of them, 545 had no information about the cause of the trauma. Thus, they could not be part of the sample.

The data collection instrument had the following socio-demographic variables: age, gender, skin color, occupation, place of origin, marital status, the level of education and clinical data: cause and type of trauma, areas of the face injured, exams, medications, sutures, and surgeries. There were not data found for the pre-hospital care and the admission requirements, so these variables were excluded from the study.

The sample consisted of accidents with victims of the face and head trauma, according to the International Classification of Diseases (ICD), assisted in the emergency department of a hospital in the state of São Paulo, in the period from 2011 and 2014. ICD diagnoses selected for the composition of the sam-

ple were multiple injuries of the head (S017), other superficial injuries of eyelid and periocular area (S002), superficial nose trauma (S003), superficial ear trauma (S004), superficial trauma of the lips and oral cavity (S005), multiple superficial head trauma (S007) and unspecified head trauma (S009).

This study had patients assisted in the emergency department from January 2011 to December 2014. They were selected based on ICDs mentioned above.

To facilitate the analysis, the ICDs were grouped according to the similarity of trauma and recorded in a worksheet, resulting in two categories: face trauma and craniofacial trauma.

For data analysis, they were transcribed and organized in a spreadsheet in Microsoft Office Excel, version 2010. Later, the chi-square association tests with univariate approach and correspondence analysis to multivariate approach were used, whose purpose was to determine possible trends, relationships between the causes and types of trauma and variable sample characterization. This approach aimed to observe results that there were not able to be observed by applying the univariate tests. All statistical tests were applied with a 0.05 significance level. The software used for the statistical analysis was Minitab 17 (Minitab Inc.) and the Statistical 10 (StatSoft Inc.).

This article is part of the main project approved by the Ethics Committee of the Medicine School of São José do Rio Preto with approval number 1005767.

RESULTS

The sample consisted of 867 patients who underwent craniofacial trauma. The main areas affected included: nose, ear, jaw, eyebrows, lips, oral cavity, eyelid, periocular region, and chin.

According to the results in Table 1, most of the patients evaluated are male (60.9%), aged between zero and 20 years old (66.8%), white (87%) from São José do Rio Preto (55.5%), Inactive (not employed) (79.6%), unmarried (84.8%) and illiterate (52.7%).

Table 2 shows the falls, height, and level of the main cause of trauma (74.1%), with statistical significance ($p < 0.001$). Regarding the type of trauma, the craniofacial injury was more frequent (75.7%) compared to the face injury. Of the seven ICDs included in the research, five were superficial craniofacial trauma. Thus, in most assistance, certain procedures were not performed such as tests in 80.3% of patients, 93.5% dressings, 93.7% sutures, 76.1% medication and surgery in 99.3%.

When the cause of trauma was related to the collision, there were: collision with trash, walls, iron bar, glass door, face trauma with a baseball ball and between heads. About the trauma caused by falling objects on the head and face, there were detected: accident with tile fall, fruit (jackfruit), 29-inch television, mechanical piece, face hit and div-

ing pool. The analyzed falls occurred in the following places: stairs, roofs, cabinets, horses, sofas, tables, children's toys, baby strollers, bicycles, skateboards, beds, swings, mother's lap, walker, slide, and height. Other accidents with head and face trauma include accident by syncope, seizure by accident, car accident, physical aggression and drunkenness. It was observed that the causes and mechanisms of trauma were several as well as its severity.

Table 1 - Percentage of variables of the sample characteristics, São José do Rio Preto, 2015

Variables of the sample characteristics	n	%
Gender	867	100
Female	339	39.1
Male	528	60.9
Age (age group)	867	100
0-20 years old	579	66.8
21-40 years old	144	16.6
41-60 years old	78	9.0
Over 60 years old	66	7.7
Skin color	867	100
White	755	87
No white	112	13
Origin	867	100
São José do Rio Preto (SJRP)	481	55.5
Other places	386	44.5
Occupation	823	100
Active	168	20.4
Inactive	655	79.6
Marital Status	862	100
With a partner	131	15.2
Without a partner	731	84.8
Education level	816	100
Illiterate	430	52.7
Elementary	216	26.5
High school	115	14.1
Higher education	55	6.7

Source: Computerized medical records of the MV System Base Hospital S. J. R. Preto, 2011 to 2014.

The results in Table 3 show that motorized and non-motorized accidents (motorized vehicles, motorcycles, bicycles, and trampling) were more frequent in patients from the cities in the region (75%), belonging to the DRS XV, being registered patients from 67 cities, assisted in that service. Patients of São José do Rio Preto presented more physical aggression (64.4%), fall (59.5%) and syncope/seizures (66.7%).

Table 2 - Percentage of variables of the trauma characterization, São José do Rio Preto, 2015

Variables of the trauma characteristic	n	%
Cause of trauma	320	100
Motorized or non-motorized accident	24	7.5
Physical aggression	45	14
Drunkenness	5	1.5
Fall	237	74.1
Syncope/seizure	9	2.8
Type of trauma	867	100
Head traumas	657	75.7
Facial Traumas	210	24.2
Exams	867	100
No	696	80.3
Yes	171	19.7
Dressings	867	100
No	811	93.5
Yes	56	6.5
Sutures	867	100
No	813	93.7
Yes	54	6.3
Medication	867	100
No	660	76.1
Yes	207	23.9
Surgery	867	100
No	861	99.3
Yes	6	0.7

Source: Computerized medical records of the MV System Base Hospital S. J. R. Preto, 2011 to 2014.

Regarding marital status, patients without a partner experienced more craniofacial traumas, when compared with those who had a partner.

The results in Table 4 indicate that administration of dressings was more common in patients who suffer physical abuse, followed by those experienced motorized or non-motorized accident. Medication administration was higher in patients who have suffered motorized and non-motorized accidents and syncope/seizures.

Table 5 suggests that the craniofacial trauma were those that required more care since exams, suture and medication were more numerous for these types of trauma. This result provides the possibility to assume that the craniofacial trauma has more complexity and severity than just facial traumas, which are usually superficial.

Table 3 - Percentage of trauma cause association with the place and marital status of patients, São José do Rio Preto, 2015

Causes of trauma	Place		Marital Status	
	SJRP	Other	With a partner	Without a partner
Motorized or non-motorized accidents	25%	75%	16.7%	83.3%
Physical aggression	64.4%	35.5%	27.2%	72.7%
Fall	59.5%	40.51%	8.9%	90.1%
Syncope/seizure	66.7%	33.3%	33.3%	66.7%
Value p ¹	0.007		0.005	

Source: Computerized medical records of the MV System Base Hospital S. J. R. Preto, 2011 to 2014.

Table 4 - Percentage of cause trauma association with dressings and medication, São José do Rio Preto, 2015

Causes of trauma	Dressings		Medication	
	No	Yes	No	Yes
Motorized or non-motorized accidents	79.1%	20.8%	16.6%	83.3%
Physical aggression	75.6%	24.4%	48.9%	51.1%
Fall	90.3%	9.7%	52.3%	47.7%
Syncope/seizure	100%	0.0%	22.2%	77.8%
Value p ¹	0.016		0.002	

Source: Computerized medical records of the MV System Base Hospital S. J. R. Preto, 2011 to 2014.

Table 5 - Percentage of cause trauma association with exams, sutures, and medication, São José do Rio Preto, 2015

Exams	Type of trauma		Value p
	Head traumas	Face traumas	
No	70.8%	29.17%	<0.001
Yes	95.9%	4.1%	
Suture			
No	75%	24.9%	0.034
Yes	87%	13%	
Medication			
No	70.1%	29.1%	<0.001
Yes	91.3%	8.7%	

Source: Computerized medical records of the MV System Base Hospital S. J. R. Preto, 2011 to 2014.

DISCUSSION

This study characterized the causes of craniofacial trauma from the selection of ICDs. It was necessary to investigate three ICDs related to traumas located in the head: multiple superficial head trauma, unspecified head trauma, and multiple head trauma. This data need for specification of these diagnoses for research because they also brought trauma related to the face.

Thus, the mechanisms of trauma found in this study included collisions by car accidents, trauma caused by falling objects on the head and face, generally falls, motorized and non-mo-

torized accidents, drunkenness, syncope, and seizures - all commonly associated with head and face trauma. Knowledge of the mechanism of injury can predict which lesions the patients may present. Furthermore, the study enables the planning and implementation of prevention and recovery from such trauma.¹⁶

Although the study sample was composed of 867 records, there were records of its causes in only 320, while in 547 there was no information or records about the trauma mechanisms. These causes were classified into five categories: motorized and non-motorized accident (7.5%), physical aggression (14%), drunkenness (1.5%), fall (74.1%) and syncope/seizures (2.8%).

As described, falls accounted for most occurrences of accidents causing craniofacial trauma. These causes may include many factors such as age, gender, socioeconomic status, occupation, among others. Studies carried out confirmed that certain age groups are more vulnerable to falls, such as children, retired elderly and people with a job.¹¹

In North America, evaluations show that falls are the leading cause of non-fatal injuries to children and adolescents up to 19 years old.¹⁶ A study conducted in the United States of America (USA) showed the prevalence of facial trauma in children and adolescents under 21 years old. The most frequent injuries were fractures of the nasal bone and jaw. The most common causes were several falls, bicycle accidents, pedestrian accidents, injuries from firearms, burglary and traffic accidents. Thus, it was observed that the mechanisms of trauma are associated with the activities performed in each age group.¹⁷

Also in this study, there was the largest number of male subjects (60.9%), predominantly illiterate people (52.7%) and without a partner (84.8%). In a study in Bahia, the results showed a predominance of facial trauma in women, unlike this article. This may be associated with the prevalence of trauma mechanism found, which was physical aggression (70%), divergently of the data from this study, which revealed more falls.⁸

The variable education presents strong evidence of being related to craniofacial trauma. The same study showed a predominance of victims with low education (45% had incomplete elementary school), going against the finding in this work. This factor can be modified to improve the level of education and from educational activities to reduce alcohol consumption, guidelines for dealing with stressful situations to avoid aggression and education measures in traffic, promoting awareness of drivers as compliance with laws.⁸

Considering the perspective of life cycles, the results of this study showed that the highest proportions of trauma were observed in children and adolescents aged between zero and 20 years old (66.8%), followed by young adults 21-40 years old (16.6%). This result was significant about facial trauma, with $p < 0.001$. A study conducted by the emergency services in the Federal District between September and November from 2006 to 2007 reported a prevalence of victims of accidents and violence in the age group 20-39 years old (13%), followed by 40-59 years old (11, 4%).^{16,18}

The study found that the major cause of the occurrence of facial trauma comes from falls, followed by incidents of physical abuse. Regarding the multivariate analysis, these traumas, as a rule, were caused by physical aggression, syncope/seizures, and drunkenness, linked to motorized and non-motorized accidents. These traumas are associated with patients with high levels of education, with a paid job and intermediate age activity (between 21 and 60 years old). Craniofacial traumas were caused by falls. These results were also found in other studies.^{19,20}

In this context, the male concentrated 60.9% of the assistance. Gender differences in the risk of accidents by external causes ranged to be associated with several factors. It is known by the results of previous research that men consume more alcohol and cigarettes than women, which contributes to the increase in accidents due to external causes. The same happens with work, stress, genetic and hormonal factors, which lead to increased male vulnerability, even in the intrauterine stage.

Scholars have called particular attention to the hostile and adventurous behavior of men, which leads to more accidents and deaths due to external causes compared to women. Study carried out from the data obtained from the Mortality Information System (MIS) in 2010 states that men consume more alcohol and are exposed to risks more than women, because of cultural models, gender, and the masculinity behaviors.^{18,21,22}

Another important result was related to the race of individuals in the sample, where there were accidents predominantly in Caucasians. This is due to the higher concentration of people of that race in the South and Southeast of Brazil, which belongs to the region studied. The largest concentration of dark population is registered in the North and Northeast, especially in Pará, with 69.5%, while blacks are more present in the Northeast, especially in Bahia, where 17.1% declared themselves as black (2.4 million people).²³

The sample of this study highlighted that there were more accidents with injuries on the face in the city of São José do Rio Preto than in other cities in the region (belonging to the administrative region DRS XV), with the frequency of 55.5% and 44.5%, respectively. However, motorized and non-motorized accidents were most prevalent in the cities of the region, 75%. In the time between 2011 and 2014, according to DATASUS, there were 23,331 hospital admissions from accidents by external causes in São José do Rio Preto, in the SUS. Regarding accidents occurring in those years, the head and face traumas recorded in this study accounted for 3.7% of the total.²⁴

Regarding the traumas characterization variables, such as exams (19.7%), dressings (6.5%), sutures (6.3%), medications (23.9%) and surgery (0.7%), all were exiguous. These variables are fundamental in trauma care, both related to the treatment and prevention of complications. It was observed that there were 54 sutures and 56 dressings. Therefore, it is believed that all subjects who underwent suture had the same protected dressings. The description of these procedures and surgeries were not considered in this data collection since it was necessary for the proposed objectives.

As the suture is classified as a surgical procedure, the recommendation of the Center for Disease Control Prevention (CDC) is that the surgical incisions that heal by the first intention should be covered with sterile bandage for a period ranging between 24 and 48 hours.^{25,26}

The patients who are treated in emergency rooms require full evaluation, specific care, cautious, as well as carrying out fast and efficient procedures. For this, the humanized care with health professionals able to perform the essential actions is fundamental to stabilize the vital functions, prevent damage and/or injuries to patients. In this sense, knowledge of the characteristics and profile of these patients is essential, allowing to obtain systematized information that will be used to carry out the planning and strategies to improve care.¹¹

CONCLUSION

The analysis of 867 electronic records of facial trauma victims patients and head assisted in that emergency room in the period between from 2011 to 2014 concluded that the facial

trauma was more common in the age group between 21 and 60 years old, active patients in the labor market, with a partner and higher-level education. The main causes were physical aggression, syncope/seizures and drunkenness and traumas considered lighter, a fact that impacts on emergency services, demanding professionals and materials, and increase the flow of attending these services. In contrast, craniofacial trauma was more frequent in patients between zero and 20 years old and over 60 years old, retired, unmarried and illiterate or with only elementary education. Its main mechanism was fallen.

Characterization of patients assisted at emergency services shown to be important, as it allows the knowledge of the target population care, being the main causes of calls, thus enabling the planning of human resources, materials, and the creation of protocols and procedures, with the aim of continuous improvement of the service. Considering the impact of trauma on public health, there was the need to carry out further work to characterize and analyze the most frequent traumas, and thus make proper planning of promotion and prevention of these diseases.

As a study limitation, there is the incomplete information in electronic medical records, so there were difficulties regarding the lack of some information, for example, the causes of trauma, which administered medications and the characteristics of the lesions.

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