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## Facial traumas among females through violent and non-violent mechanisms<sup>☆</sup>

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### PALAVRAS-CHAVE

Estudos transversais;  
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mulher;  
Ferimentos e lesões;  
Violência

### Abstract

**Introduction:** Injuries stemming from facial trauma have both physical and emotional consequences among affected individuals as well as an economic impact on the healthcare system.

**Objective:** The aim of this retrospective study was to determine the occurrence of facial trauma among females of different age groups treated at an urgent care ward in the northeast of Brazil in a two-year period.

**Materials and methods:** A cross-sectional study was carried out involving 247 charts. Data on patient age, etiological agent and site of trauma were recorded.

**Results:** Adults accounted for 48.6% of the sample. Falls were the most frequent cause of trauma (38.5%); soft tissue injuries were the most prevalent ones (67.6%); age was significantly associated with the etiology of the injuries; falls were the most common cause among children/adolescents and elderly individuals, and acts of violence were more common among adults.

**Conclusion:** Adult females were affected by facial trauma more than the other age groups studied, with a predominance of soft tissue injuries and injuries to the mandible, maxilla, zygomatic arch and nasal bones. Falls were the most prevalent cause of facial trauma and significantly associated with the youngest (children/adolescents) and oldest (elderly individuals) age groups.

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### Traumatismos faciais em mulheres por mecanismos violentos e não violentos

### Resumo

**Introdução:** O trauma facial pode ser considerado uma das agressões mais expressivas devido às consequências emocionais, à possibilidade de deformidade e também ao impacto econômico que os mesmos causam em um sistema de saúde.

**Objetivo:** Este estudo retrospectivo verificou a ocorrência de traumas faciais em mulheres,

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atendidas em um hospital de emergência de um município do Nordeste do Brasil, no período de dois anos.

**Material e método:** esse estudo transversal avaliou n = 247 prontuários. Os dados foram coletados por meio de um formulário contendo: a faixa etária, o agente etiológico e a localização do trauma.

**Resultados:** Verificou-se uma maior prevalência de mulheres adultas (48,6%). A etiologia mais frequente foi a queda da própria altura (38,5%), prevalecendo lesões em tecido mole (67,6%). Quando associadas à etiologia da lesão com a faixa etária, constatou-se uma diferença estatisticamente significativa, apontado a relação entre crianças e idosos com a queda da própria altura e adultas com eventos violentos.

**Conclusão:** As mulheres adultas foram as mais afetadas, havendo predomínio das lesões em tecido mole e em região que corresponde à mandíbula, maxila, zigomático e ossos nasais. A queda da própria altura foi a etiologia mais prevalente e associada às crianças e idosos.

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## Introduction

Injuries to the face are more common in comparison to other regions of the body.<sup>1</sup> The main causes of facial trauma are traffic accidents, fights, falls and sports injuries.<sup>2</sup> The high prevalence of this form of trauma stems from the fact that the face is highly exposed and unprotected. Such injuries can result in complex esthetic problems, loss of function and high treatment costs.<sup>3-5</sup> Moreover, facial trauma often requires a multidisciplinary approach due to the effects on both soft tissues and bones as well as possible involvement of the eyes, nerves and brain.<sup>6,7</sup>

Violence against women committed by either family members or strangers is a social problem found in all categories of age, religion, schooling and socioeconomic class. Most cases occur within the family, committed by individuals with personal and emotional ties with the victim, and can leave severe physical and emotional scars.<sup>8,9</sup>

The aim of the present study was to evaluate cases of facial trauma among female victims at the urgent care ward of a hospital in a medium-sized city in northeastern Brazil.

## Materials and methods

A retrospective, inductive, observational, cross-sectional study was carried out involving 247 patient charts of female victims of facial trauma treated at the urgent care ward between January 2010 and December 2011 in Campina Grande, state of Paraíba, Brazil. This city is the second largest city in the state (population: approximately 695,931 inhabitants), and is located 125 km distant from the capital.<sup>10</sup>

Data were recorded on a form specifically drafted for the present study addressing sociodemographic data (age and gender) as well as etiology, type and site of the trauma. Age was categorized as follows: children/adolescents (0 to 19 years), adults (20 to 59 years) and elderly individuals (60 years or older). Etiological agent was categorized as traffic accident (automobile, motorcycle and bicycle), interpersonal aggression or fall. Type of facial trauma was categorized based on descriptions used by Silva et al.:<sup>11</sup> soft tissue injury, fracture (simple and multiple), dentoal-

veolar trauma or others. Anatomic site was categorized as intraoral region, mandible/maxilla/zygomatic arch, nasal bones/periorbital region/brow or others.

This study was carried out in compliance with national and international guidelines for research involving human subjects (Declaration of Helsinki and Resolution 196/96 of the Brazilian National Health Board), is registered with Brazilian National Research Ethics System (SISNEP) and has received approval from the Human Research Ethics Committee of Universidade Estadual da Paraíba, process CAAE n° 02266.0.133.000-10.

The data were submitted to univariate and bivariate analysis using Pearson's chi-square test and Fisher's exact test. The level of significance was set to 5% ( $p < 0.05$ ). All analysis were performed with the aid of the SPSS program, version 18.0.

## Results

Two hundred forty-seven patient charts of female victims of facial trauma were examined. Adults accounted for 48.6% of the sample. A similar number of victims occurred in both years analyzed (2010 and 2011), with 51.4% of the total number of cases occurring in 2010 (Table 1). Fall from one's own height was the most frequent cause of trauma (95 cases; 38.5%). Soft tissue injuries were the most prevalent (67.6%). The most affected anatomic structures were the mandible, maxilla and zygomatic arch (Table 2).

Age was significantly associated with the etiology of the injuries ( $p > 0.001$ ) with acts of violence, the most common cause among adults. Falls were the most common cause among children/adolescents and elderly individuals (Table 3). A greater prevalence of soft tissues injuries occurred in all age groups and children/adolescents were the only group to suffer dentoalveolar trauma (Table 4). Injuries to the mandible, maxilla and zygomatic arch were the most prevalent in all age groups. Intraoral injuries were more prevalent among children/adolescents. Nasal bones/periorbital region/brow injuries were more prevalent among elderly individuals ( $p = 0.007$ ) (Table 5).

**Table 1** Percentage distribution of age groups and year of occurrence of facial trauma: Campina Grande, Brazil, 2012 (n = 247).

Variable	n	%
Age group		
Children/adolescents (0 to 19 years)	96	38.9
Adults (20 to 59 years)	120	48.6
Elderly individuals (60 years or older)	31	12.6
Year		
2010	127	51.4
2011	120	48.6
Total	247	100

Source: Direct research, 2012.

**Table 2** Percentage distribution of etiology, type and site of facial trauma: Campina Grande, Brazil, 2012 (n = 247).

Variable	n	%
Etiology		
Traffic accident	56	22.7
Physical aggression	79	32.0
Fall	95	38.5
Others	17	6.9
Type of injury		
Soft tissue injury	167	67.6
Fracture (multiple or simple)	59	23.9
Dentoalveolar trauma	9	3.6
Unidentified	12	4.9
Site of injury		
Intraoral region	57	23.1
Mandible/maxilla/zygomatic arch	108	43.7
Nasal bones/periorbital region/brow	33	13.4
Others	49	19.8
Total	247	100

Source: Direct research, 2012.

**Table 3** Percentage distribution of age groups and year of occurrence of facial trauma: Campina Grande, Brazil, 2012 (n = 247).

Variable	Traffic accident		Physical aggression		Fall		Others		Total	
	n	%	n	%	n	%	n	%	n	%
Age group										
Children/adolescents (0 to 19 years)	19	19.8	23	24.0	50	52.1	4	4.2	96	100
Adults (20 to 59 years)	34	28.3	51	42.50	24	20.0	11	9.2	120	100
Elderly individuals (60 years or older)	3	9.7	5	16.1	21	67.7	2	6.5	31	100
									247	100

Fisher's exact test: p &lt; 0.001.

Source: Direct research, 2012.

**Table 4** Distribution of age groups according to type of injury: Campina Grande, Brazil, 2012 (n = 247).

Variable	Soft tissue injury		Fracture		Dentoalveolar trauma		Unidentified		Total	
	n	%	n	%	n	%	n	%	n	%
Age group										
Children/adolescents (0 to 19 years)	68	70.8	16	16.7	9	9.4	3	3.1	96	100
Adults (20 to 59 years)	76	63.3	37	30.8	-	-	7	5.8	120	100
Elderly individuals (60 years or older)	23	74.2	6	19.4	-	-	2	6.5	31	100
									247	100

Fisher's exact test: p = 0.002.

Source: Direct research, 2012.

**Table 5** Distribution of age groups according to site of injury; Campina Grande, Brazil, 2012 (n = 247).

Variable	Intraoral region		Mandible, maxilla, zygomatic arch		Nasal bones, periorbital region, brow		Others		Total	
	n	%	N	%	n	%	n	%	n	%
Children/adolescents (0 to 19 years)	32	33.3	39	40.6	6	6.3	19	19.8	96	100
Adults (20 to 59 years)	22	18.3	56	46.7	18	15.0	24	20.0	120	100
Elderly individuals (60 years or older)	3	9.7	13	41.9	9	29.0	6	19.4	31	100
									247	100

Fisher's exact test: p = 0.007.

Source: Direct research, 2012.

## Discussion

The Human Development Index - HDI - ranges from 0 to 1, the closer to 1, the higher the HDI of a site. Brazil has a HDI of 0.728, which is considered high, currently ranks 85 in the world ranking. Brasília, the capital of the country, has an index of 0.874; the state of Paraíba, 0.718; and the city of the study, 0.72, a value similar to the national HDI.<sup>10</sup>

The hospital where the present study was carried out is one of the main reference service for trauma victims in the region, with a mean of 1.28 cases of facial trauma per day and a total of 467 per year. A total of 36.5% of these victims require surgery, with an annual mean of 170 surgeries performed for facial trauma.

Facial trauma is considered one of the most serious types of injury and affects both men and women of all ages and social classes. The incidence of facial trauma has risen significantly in recent years, especially among the younger population. Such injuries can lead to permanent scars with accompanying emotional consequences.<sup>4,8</sup>

Falls were the primary cause of facial trauma, affecting 38.5% of the sample. This finding is in agreement with data reported in previous studies.<sup>11-14</sup> However, healthcare professionals often find it difficult to investigate and register trauma resulting from aggression due to the emotional state of the victim, who, due to either omission or shame, is unable or unwilling to explain the reasons that led to the act of aggression, which often may have been induced by the use of alcoholic beverages or illicit drugs.<sup>15,16</sup> Thus, the greater frequency of reports of falls raises the question as to whether this etiological factor truly represents the experience of these women or may be masking cases of violence practiced in the home environment. When refusing to report violent practices, women become increasingly exposed to risk factors and unreported cases limit the actions of health professionals to initial care, surgery and hospitalization.

Brazilian law (n° 10.778) stipulates the mandatory notification of any type of violence practiced against women treated at public or private healthcare services. Medical/hospital care in such cases should address all problems and

needs, with no discrimination in terms of age group, race, gender or religion.<sup>17</sup> The particular attention given to this issue encourages respect for women's rights and represents a reaffirmation of support through public policy. Clarifying this information signifies the recognition of the victim's main needs in terms of both primary care and follow-up, allowing the determination of the extent of the consequences of such injuries, which often go beyond physical aspects. Thus, a more in-depth evaluation is needed to ensure the effectiveness of treatment.

The greater prevalence of cases of facial trauma among adults is in agreement with findings reported in previous studies.<sup>3,13</sup> Women have been the victims of different forms of trauma, the occurrence of which has been associated with their inclusion in the workforce at jobs previously exercised by men. Moreover, such activities need to be reconciled with household responsibilities, which can lead to greater exposure to problems of a psychological nature. The literature reports a tendency toward equal frequencies of facial trauma between males and females, which has been attributed to the greater participation of women in the job market, including high-risk occupations.<sup>18</sup>

In a retrospective study at an urgent care unit in the United Kingdom, Gerber et al.<sup>19</sup> found that the majority of the 219 cases of facial trauma among females occurred due to accidents and women over 20 years of age were at greater risk of domestic violence. The results of the present study are in agreement with these findings. Indeed, falling from one's own height was the leading cause of facial trauma among children/adolescents and elderly individuals. Hussain et al.<sup>20</sup> report similar findings in a comprehensive analysis of trauma, in which falls occurred with greater frequency among children and elderly individuals, whereas acts of interpersonal violence constituted the main cause of occurrences among individuals aged from 15 to 50 years.

Kotech et al.<sup>21</sup> also found that the majority cases of facial trauma in children stemmed from falls, with soft tissue injuries the most common and cases of interpersonal violence less common. Likewise, in a series of 793 cases of facial fractures in children, Mericli et al.<sup>22</sup> found that 98 cases

stemmed from violent events, and 695 were due to other causes. Eggensperger et al.<sup>23</sup> also found that falls were the most common cause of facial trauma, followed by traffic accidents and sports injuries. In contrast, a study carried out in Korea found that interpersonal violence was the most common cause of facial fractures in children.<sup>24</sup> In a study on characteristics and trends of hospitalization due to head trauma among children carried out in China, while only 4.6% were cases of suspected child abuse, the authors stress the importance of recognizing such cases to gain a better understanding of the scope of this social/health problem.<sup>25</sup>

Falls constitute the most common etiological agent of facial trauma among elderly individuals in a number of studies.<sup>26-28</sup> This finding underscores the importance of preventive measures aimed at risk factors for falls, the majority of which occur in one's own home. Although interpersonal violence accounts for less cases of facial trauma than falls in this age group, it is plausible to consider that women may have been exposed to violence and the consequences of such events throughout life. In a sample of 995 women aged 55 years or older, nearly half had had experience with some type of abuse and were more likely to report negative effects of trauma on health in comparison to women who had not suffered abuse.<sup>29</sup>

Soft tissue injuries were the most common type of facial trauma in the present investigation, accounting for 67.6% of cases, which is similar to findings reported in previous studies.<sup>11,19</sup> The effects of such injuries include pain, numbness of the lips, chin and nose, difficulty opening one's mouth, visible gap between dental crowns and deep lacerations over bones.<sup>1,9,11,12</sup>

Due to the physical and psychological impacts as well as the high healthcare costs related to facial trauma, the recognition of associations with gender and age underscores the need for specific measures aimed at addressing this problem. Oral and maxillofacial surgery plays an important role in the rehabilitation of trauma victims and the establishment of preventive measures for specific groups through the recognition of the underlying social implications of facial injuries.

## Conclusion

Adult females were affected by facial trauma more than the other age groups studied, with a predominance of soft tissue injuries and injuries to the mandible, maxilla, zygomatic arch and nasal bones. Falls were the most prevalent cause of facial trauma and significantly associated with the youngest (children/adolescents) and oldest (elderly individuals) age groups.

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## Conflicts of interest

The authors declare no conflicts of interest.

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