

## Interpersonal violence, circumstances of aggressions and patterns of maxillofacial injuries in the metropolitan area of Campina Grande, State of Paraíba, Brazil (2008-2011)

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**Abstract** *The aim of this study was to determine the circumstances of aggressions and patterns of maxillofacial injuries among victims of interpersonal violence. This was a cross-sectional and exploratory study conducted from the analysis of 7,132 medical-legal and social records of interpersonal violence victims seen in a Forensic Medicine and Dentistry Center. Descriptive and multivariate statistics were performed using Multiple Correspondence Analysis. Three groups with different victimization profiles were identified. The first group was mainly composed of men of different age groups, victims of community violence that resulted in facial bones or dentoalveolar fracture. The second group was mainly composed of adolescents (10-19 years) of both sexes, victims of interpersonal violence and without specific pattern of injuries. The third group was composed of adult women ( $\geq 20$  years) victims of domestic violence that resulted in injuries of soft tissues of face or other body regions. The results suggest that socio-demographic and circumstantial characteristics are important factors in victimization by maxillofacial injuries and interpersonal violence.*

**Key words** *Violence, Interpersonal relations, Facial injuries, Epidemiology*

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## Introduction

Interpersonal violence is considered a high-priority public health problem in different regions of the world and has been widely discussed by various sectors of society due to its impact on public safety indicators, on the daily lives of individuals and to the constant presence of victims in health services<sup>1-4</sup>. Every year, millions of people lose their lives and many others carry non-fatal injuries resulting from domestic and community violence. Furthermore, violence is a major cause of death in people aged 15-44 years throughout the world, which can be avoided by modifying its contextual and situational factors<sup>5-7</sup>.

Exposure to violence is associated with several adverse health outcomes, including anxiety, depression, use of psychoactive substances, post-traumatic stress disorder (PTSD) and suicide attempt<sup>8-11</sup>. There are different systems for violence classification and one of them is divided into two sub-categories: domestic violence and community violence. The first typically occurs among family members or intimate partners, usually in the domestic sphere, the second is more associated with criminal behavior, such as assaults, fights, kidnappings and murders that occurred among individuals who may or may not know each other, often occurring in different places<sup>5,12</sup>.

Brazil is still among countries with high levels of violence, although in recent years, many efforts have been targeted to reduce these rates. It is estimated that there were 54.5 homicides for every 100,000 young people aged 15-29 years in 2010<sup>13</sup>. The intensification of illicit drug trafficking, smuggling, and trafficking of firearms and other commodities have been considered factors contributing to the increase in violence rates in the country<sup>14</sup>.

Physical aggression situations seem to be the most common and a significant increase in the prevalence of maxillofacial injuries resulting from interpersonal violence has been reported, which may exceed 50.0%<sup>1,12,15</sup>. Therefore, recognizing the most vulnerable populations, assessing the needs of health services, developing programs aimed at combating violence and proposing clinical protocols for the treatment of maxillofacial injuries have become crucial and depend directly on the understanding of contextual and situational factors experienced by different regions.

Brazilian emergency hospitals have received and treated many victims of interpersonal violence, especially the most serious cases<sup>1,2,12</sup>. How-

ever, not all individuals with injuries related to physical aggressions are treated in hospitals. In Brazil, many victims of interpersonal violence are referred to carry out forensic examinations in Forensic Medicine and Dentistry Centers.

After conducting a critical literature review, it was found that there are few studies aimed at determining the profile of interpersonal violence victims seen in forensic services and investigating relationships between sociodemographic characteristics, circumstances of aggressions and patterns of maxillofacial injuries. Such studies may provide useful information not only related to injuries, but also about the circumstances in which aggressions occur, thus contributing to the advancement of knowledge on this field.

In this context, the aim of this study was to determine the profile of interpersonal violence victims and investigate relationships between sociodemographic characteristics, circumstances of aggressions and patterns of maxillofacial injuries.

## Methods

### Study characterization

This was a cross-sectional and exploratory study conducted from the analysis of 7,132 medical-legal and social records of interpersonal violence victims seen in a Forensic Medicine and Dentistry Center. This institution is a reference to 23 municipalities in the metropolitan area of Campina Grande, Paraíba, Brazil and performs forensic examinations in violence victims living in the urban, suburban and rural areas, covering a population of approximately 680,000 inhabitants.

### Data collection

All records of interpersonal violence victims that resulted in maxillofacial injury and / or injury to other body regions between January 2008 and December 2011 were included, totaling 7,132 cases.

Prior to the survey, a pilot study and calibration procedures were carried out in order to test the proposed methodology and standardize how the information available in medical-legal and social records of victims would be interpreted. In the pilot study, three researchers were submitted to the training and calibration exercise to perform data collection. The exercise was performed with 30 different medical records of year 2007

randomly selected on two occasions, with an interval of one week. Intra- and inter-rater concordances were evaluated by the Kappa test and both obtained  $K = 0.85-0.90$ , considered very good.

A form was specifically developed for this study based on information contained in the medical-legal and social records of victims. These records are filled by the institution's employees, who perform the function of legal experts in medicine or dentistry. Since the institution does not have a digital information system, each record has been read and the information consistent with the study objectives was transcribed by researchers properly trained and calibrated to perform this function.

The distribution of the socio-demographic characteristics of victims, the circumstances of aggressions and patterns of maxillofacial injuries and / or injuries to other body regions were investigated. Variables were categorized as follows: (i) socio-demographic data of victims: age (years), sex (male / female), area of residence (urban / suburban / rural), marital status (single / widowed or separated / married / stable union); (ii) characteristics of aggressions: type of violence<sup>5</sup> (domestic / community), mechanism of aggression<sup>1</sup> (physical force, such as slaps, punches, hair pulling, kicking / firearm, such as gun, pistols, rifles / melee weapon, such as knife, dagger, sickle / other blunt objects, such as iron bar, bottles, cups / mixed aggression, *i.e.*, more than one mechanism at the same time), aggressor's sex (male / female), relationship between aggressor and victim (partner / ex-partner / family member / known / stranger) and period of occurrence<sup>1</sup> (day, between 06:00 am and 05:59 pm / and night, between 06:00 pm and 05:59 am); (iii) patterns of injuries: type of injury<sup>1,12</sup> (soft tissue lesions on the face, such as edema, bruises, lacerations, cuts and abrasions / facial bone fracture / dentoalveolar injuries, *i.e.*, teeth and supporting tissues of teeth) and affected body region (head / neck / upper limbs / lower limbs / thorax / abdomen / more than one region).

### Statistical analysis

Initially, descriptive statistical analysis was performed, which corresponded to the calculation of absolute and percentage frequencies for qualitative variables, and the calculation of central tendency (mean, median) and variability measures (standard deviation, interquartile range) for quantitative variables. Then, the relationships among categories of variables investi-

gated were assessed by Multiple Correspondence Analysis (MCA). This is a multivariate statistical technique of interdependence of exploratory feature, suitable for situations in which one wants to analyze categorical data with large number of variables and to place response categories on the same system of axes or dimensions<sup>16</sup>.

The starting point for performing MCA was the structuring of a data array, with violence victims in lines and the variables of interest in columns (socio-demographic characteristics of victims, aggression characteristics, and patterns of injuries). Upon crossing lines and columns, a "profile" defined of the data set is obtained<sup>16</sup>, making it possible to graphically represent the most important relationships among variables and show groups of individuals with specific profiles for explaining violence.

Discrimination measures (DM) refer to the most relevant variables for the construction of each axis / dimension and the coordinates of centroids (CC) help the reader locate each category in the perceptual map<sup>17-19</sup>. The analysis also calculates the inertia and the eigenvalue for each dimension, reflecting how much of the total variance of data is being explained<sup>16</sup>. In this study, a solution with 2 dimensions has been considered the most suitable.

Hierarchical Cluster Analysis (HCA) was used in the set of coordinates of categories generated by MCA. This strategy aims to help evidencing the grouping pattern of categories of variables, providing greater objectivity to the graphical interpretation of MCA. The agglomerative Ward method and the square Euclidean distance were used to determine the categories positioned close to each other<sup>20</sup>. The HCA result is illustrated by the dendrogram (or tree graph) in which the categories of variables are displayed in one axis and the hierarchical procedure steps are represented in another<sup>16</sup>.

### Ethical considerations

The study followed national and international ethics standards in research involving human beings and was approved by an independent ethics committee.

### Results

During the study period (January 2008 to December 2011), 7,132 people showed some kind of injury resulting from interpersonal violence.

The average age of victims was 29.64 years (SD  $\pm$  13.4) and median of 27 years (IQR = 16). Table 1 shows the distribution of interpersonal violence victims according to sociodemographic data. Most were females (52.4%), living in urban areas (68.2%) and single (57.9%).

Table 2 shows the distribution of interpersonal violence victims according to the characteristics of aggressions and patterns of injuries. Community violence was the most common type of violence (69.1%). The aggressor was usually male (75.8%) and known to the victim (42.6%). Most occurrences were recorded in the night shift (50.5%) and the most common trauma situations affected more than one body region (46.3%). Additionally, data showed that a total of 42.9% of victims exhibited some type of maxillofacial trauma.

In MCA, the first and second dimensions presented, respectively, eigenvalue of 2.347 and 1.714 and inertia of 0.235 and 0.171. Table 3 shows the distribution of discrimination measures of variables investigated and coordinates of centroids resulting from MCA for the first two dimensions. The most discriminating variables for dimension 1 hierarchically were: relationship between aggressor and victim (0.802), circumstance of aggression (0.747), victim's sex (0.412) and aggression mechanism (0.170), while for

dimension 2 were: victim's age (0.436), victim's marital status (0.420) and aggressor's sex (0.285). Variable relationship between aggressor and victim contributed in a relevant way to the formation of both dimensions. These associations are better represented graphically.

Figure 1 shows the perceptual map of the categories of variables investigated (sociodemographic characteristics of victims, aggression characteristics, and patterns of injuries). According to the geometric proximity among categories

**Table 1.** Distribution of interpersonal violence victims according to the sociodemographic data. Metropolitan area of Campina Grande, Paraiba, Brazil, 2008-2011 (N = 7,132).

Variables	n (%)
Age group	
0-9 years	175 (2.5)
10-19 years	1354 (19.5)
20-29 years	2516 (36.2)
$\geq$ 30 years	2896 (41.7)
Sex	
Female	3734 (52.4)
Male	3398 (47.6)
Area of residence	
Urban	4803 (68.2)
Suburban	1326 (18.8)
Rural	915 (13.0)
Marital status	
Single	3964 (57.9)
Widowed/Separated	412 (6.0)
Married	1571 (23.0)
Stable union	894 (13.1)

**Table 2.** Distribution of interpersonal violence victims according to the characteristics of aggression and patterns of injuries. Metropolitan area of Campina Grande, Paraiba, Brazil, 2008-2011 (N = 7,132).

Variables	n (%)
Type of violence	
Domestic	2071 (30.9)
Community	4642 (69.1)
Mechanism of aggression	
Physical force	4807 (72.4)
Firearm	368 (5.5)
Melee weapon	569 (8.6)
Other blunt objects	651 (9.8)
Mixed	246 (3.7)
Aggressor's sex	
Female	1562 (24.2)
Male	4892 (75.8)
Relationship between aggressor and victim	
Partner	949 (14.3)
Ex-partner	635 (9.6)
Family	874 (13.2)
Known person	2823 (42.6)
Strange person	1342 (20.3)
Time of occurrence	
Daytime	3153 (49.5)
Nighttime	3217 (50.5)
Type of injury	
Soft tissue injuries of face	2903 (40.7)
Facial bone fracture	112 (1.6)
Dentoalveolar fracture	42 (0.6)
Lesions in other regions	4075 (57.1)
Region of body affected	
Head	1627 (22.8)
Neck	121 (1.7)
Upper limbs	1133 (15.9)
Lower limbs	399 (5.6)
Thorax	358 (5.0)
Abdomen	195 (2.7)
More than one region	3299 (46.3)

**Table 3.** Distribution of discrimination measures of the variables and centroid coordinates resulting from the MCA for the first two dimensions.

	DM*		CC**	
	Dimension		Dimension	
	1	2	1	2
Victim's age group	0.049	<b>0.436</b>		
0-9 years			1.034	-1.906
10-19 years			-0.330	-1.041
20-29 years			0.000	0.032
≥ 30 years			0.077	0.588
Victim's sex	<b>0.412</b>	0.058		
Female			0.591	-0.221
Male			-0.693	0.262
Victim's area of residence	0.047	0.017		
Urban			0.121	-0.049
Suburban			-0.172	-0.024
Rural			-0.494	0.349
Victim's marital status	0.057	<b>0.420</b>		
Single			-0.178	-0.552
Widowed/Separated			0.275	0.330
Married			0.075	0.823
Stable union			0.519	0.872
Type of violence	<b>0.747</b>	0.028		
Domestic			1.343	0.249
Community			-0.586	-0.126
Mechanism of aggression	<b>0.170</b>	0.085		
Physical force			0.167	-0.125
Firearm			-1.605	1.069
Melee weapon			-0.437	0.426
Other blunt objects			-0.134	-0.007
Mixed			0.209	0.206
Aggressor's sex	0.030	<b>0.285</b>		
Female			0.363	-1.017
Male			-0.033	0.291
Relationship between aggressor and victim	<b>0.802</b>	<b>0.313</b>		
Partner			1.493	1.106
Ex-partner			0.517	-0.094
Family			1.275	-0.588
Known person			-0.475	-0.414
Strange person			-1.012	0.453
Time of occurrence	0.008	0.051		
Daytime			0.077	-0.242
Nighttime			-0.108	0.234
Type of injury	0.026	0.021		
Soft tissue injuries of face			0.125	-0.123
Facial bone fracture			-0.908	0.828
Dentoalveolar fracture			-0.516	0.096
Lesions in other regions			-0.094	0.080

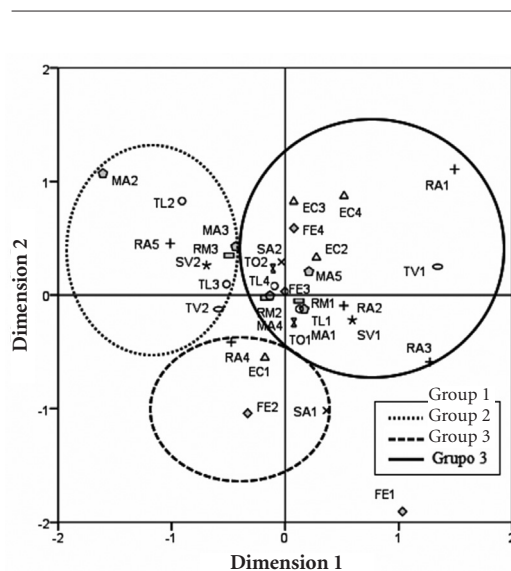
Note: DM: Discrimination Measures; CC: Centroid Coordinates; Values in bold refer to the variables whose discrimination measures were close to or higher than the values of dimension inertia.

of variables in the graph multidimensional plan, which suggests an association among them, the

formation of three groups with distinct victimization profiles (G1 to G3) was observed.

G1 was mostly composed of men living in the rural area, victims of community violence, where the aggressor was usually a stranger and that made use of firearms (guns, pistols or rifles) or melee weapon (knife, dagger or sickle) resulting in facial bones or dentoalveolar fractures. As can be seen in the perceptual map, there was no age category and marital status associated with members of this group, suggesting that they did not show a homogeneous victimization profile in relation to these variables.

G2 was mainly formed by single adolescents (10-19 years), victims of interpersonal violence where the aggressor was usually female known to the victim. As can be confirmed by visual inspection



**Figure 1.** Perceptual map of the categories of variables investigated (sociodemographic characteristics of the victims, characteristics of aggression and patterns of injuries).

Victim's age group (FE1: 0-9 years / FE2: 10-19 years / FE3: 20-29 years / FE4:  $\geq 30$  years); Victim's sex (SV1: female / SV2: male); Victim's area of residence (RM1: urban / RM2: suburban / RM3: rural); Victim's marital status (EC1: single / EC2: widowed or separated / EC3: married / EC4: stable union); Type of violence (TV1: domestic / TV2: community); Mechanism of aggression (MA1: physical force / MA2: firearm / MA3: melee weapon / MA4: other blunt objects / MA5: mixed); Aggressor's sex (SA1: female / SA2: male); Relationship between aggressor and victim (RA1: partner / RA2: ex-partner / RA3: family / RA4: known person / RA5: strange person); Time of occurrence (TO1: daytime / TO2: nighttime); Type of injury (TL1: soft tissue injuries of face / TL2: facial bone fracture / TL3: dentoalveolar fracture / TL4: lesions in other regions).

tion of the perceptual map, there was no category of sex, area of residence, type of violence, aggression mechanism and specific type of trauma associated with members of this group, suggesting that they did not show a homogeneous victimization profile in relation to these variables.

In contrast, G3 was mostly composed of female adults ( $\geq 20$  years), married / in stable union or separated / widowed, living in urban or suburban areas, victims of domestic violence, where the aggressor was usually the partner, ex-partner or a family member who made use of mixed aggression, by using physical force or blunt objects, like iron bar, bottles, glasses, resulting in injury to soft tissues of face or other body regions.

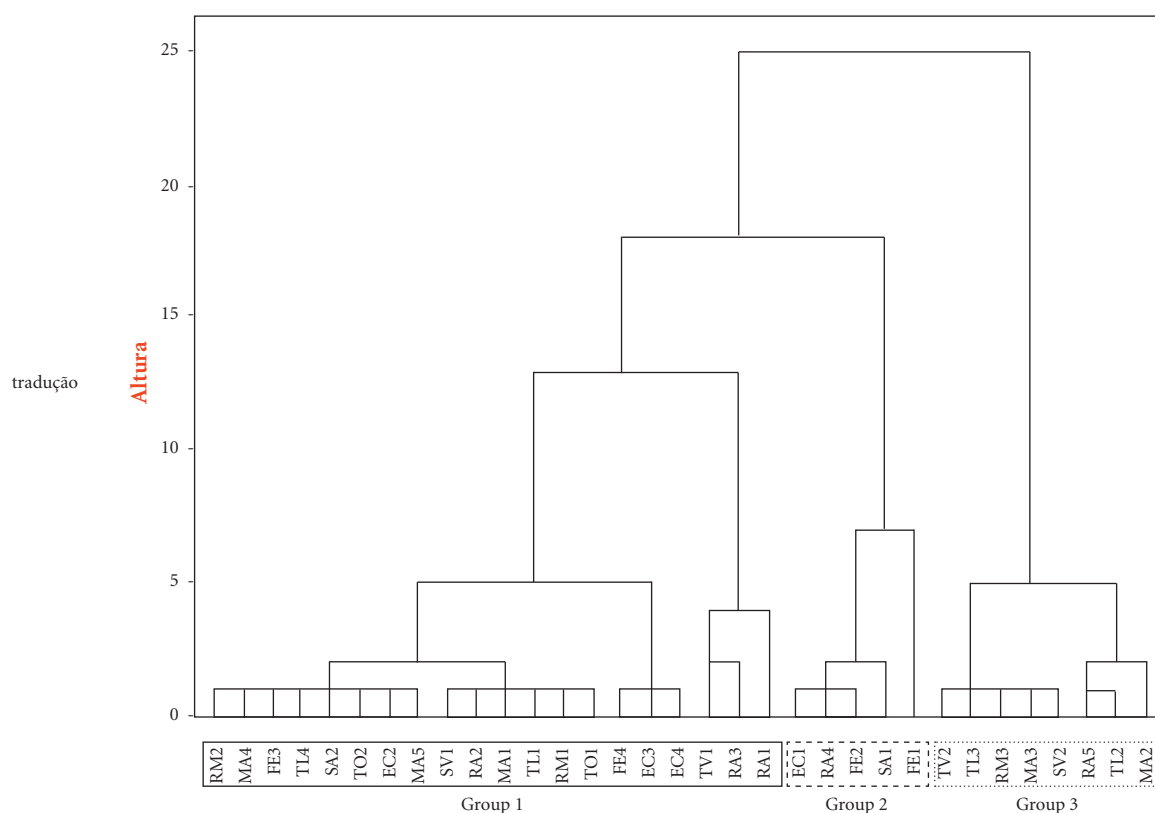
The Cluster Analysis carried out by the hierarchical method on the set of coordinates of categories generated by MCA helped identifying the grouping pattern of interpersonal violence victims. Figure 2 shows the resulting dendrogram. By using a solution with three clusters, the same conglomerates found by visual inspection of the perceptual map of the MCA were confirmed.

## Discussion

Brazil is going through a double process of dissemination and internalization of violence, resulting in the displacement of dynamic poles of occurrence from large cities to small and medium-sized cities<sup>14,21</sup>. Therefore, knowing the profile of interpersonal violence victims is essential to enable public managers to direct actions at strategic points, generating subsidies for the improvement of proposals for care and referral of victims to services better suited to each violence situation.

The proposed MCA method enabled establishing the profile of interpersonal violence victims based on their sociodemographic characteristics, circumstances of aggression and patterns of maxillofacial trauma. Only recently, this type of analysis has been used in health care studies and has proven to be a very useful tool for the analysis of categorical data and to identify groups that share the same risk factors<sup>18,19,22-25</sup>. In the present study, the formation of three clusters with distinct victimization profiles was observed.

G1 was mostly composed of men living in the rural area, victims of community violence, where the aggressor was usually a stranger and that made use of firearms or weapon, resulting in facial bones or dentoalveolar fractures. These results are consistent with previous studies in oth-



**Figure 2.** Dendrogram resulting from HCA in the coordinate set of categories generated by MCA to the first two dimensions.

Victim's age group (FE1: 0-9 years / FE2: 10-19 years / FE3: 20-29 years / FE4:  $\geq$  30 years); Victim's sex (SV1: female / SV2: male); Victim's area of residence (RM1: urban / RM2: suburban / RM3: rural); Victim's marital status (EC1: single / EC2: widowed or separated / EC3: married / EC4: stable union); Type of violence (TV1: domestic / TV2: community); Mechanism of aggression (MA1: physical force / MA2: firearm / MA3: melee weapon / MA4: other blunt objects / MA5: mixed); Aggressor's sex (SA1: female / SA2: male); Relationship between aggressor and victim (RA1: partner / RA2: ex-partner / RA3: family / RA4: known person / RA5: strange person); Time of occurrence (TO1: daytime / TO2: nighttime); Type of injury (TL1: soft tissue injuries of face / TL2: facial bone fracture / TL3: dentoalveolar fracture / TL4: lesions in other regions).

er regions of Brazil and the USA, which pointed men as the most involved in situations of community violence and more likely than women to experience robberies and violence by unknown persons<sup>1,4,26,27</sup>.

Most men victimization by community violence can be explained from the perspective of different scientific fields such as epidemiology, sociology and psychology. It is noteworthy that males are still quite characterized by sexist practices and risk behaviors that contribute to understanding the relationship of men with community violence. In Brazil, these issues are enhanced

by notorious socioeconomic disparities and other conditions adverse to citizenship<sup>1,28</sup>.

The results showed that G1 members victims of community violence did not exhibit a homogeneous victimization profile in relation to age and marital status, indicating that men at different stages of the life cycle and in different marital situations are vulnerable to this type of violence. This finding can be understood when considering the existence of high levels of robbery and crime in the study region, as well as the intense traffic of narcotics and an inefficient public security system, combined with low socioeconomic

status of the population. Previous studies carried out in other regions of Brazil have reported that men, especially adolescents and young adults are the main victims of community violence<sup>1,27</sup>. These differences can be explained considering that the occurrence of violence is influenced by various social and contextual factors, which may vary even among regions of the same country.

Fractures affecting the maxillofacial region are classified as very serious and are often associated with disfigurement, functional impairment, severe morbidity and high costs for health services and may require complex therapeutic modalities for treatment<sup>29-32</sup>. In this study, they were more associated with men exposed to community violence, suggesting greater severity of injuries occurred to this group. Thus, considering as a marker of community violence a type of trauma such as those involving the maxillofacial complex may reveal a form of insidious violence that often occurs silently and can mean the starting point for a fatal outcome<sup>2</sup>.

G2 was mainly formed by single adolescents (10-19 years), victims of interpersonal violence where the aggressor was usually female known to the victim. This result can be understood by considering that the involvement of young people in situations of violence may be related to social vulnerability, the combined use of licit and illicit drugs, psychological immaturity and lack of well-defined life projects<sup>7,27,33,34</sup>. The Map of Violence in Brazil<sup>13,21</sup> revealed that the increasing trend in the number of young people victims of violence, especially in the age range from 16 to 17 years is worrisome. The year 1980 reported a 9.1 homicide rate per 100,000 adolescents, increasing to 54.1 in 2013, which is equivalent to an increase of almost 500%. The regions with the highest violence rates were the Northeastern (where the metropolitan area under study is located) and the Midwestern regions, where 73.3 and 65.3 people died per 100 thousand youngsters, respectively. Therefore, this age group is one of the priority targets of public policies, since young people are the key for the social development of the country.

In this study, the results showed that adolescent victims of violence in the region under study did not show homogeneous victimization profile according to sex, region of residence, type of violence, aggression mechanism and specific type of trauma. These findings suggest that adolescents of both sexes living in different locations are vulnerable to situations of both community and domestic violence, through different aggression mechanism and may show different patterns of injury.

Another study using a socio-spatial approach showed that for males, 46% of young people have already been involved in physical aggression situation against another man, 17% have suffered familiar physical aggression after the age of 15 years and 41% have reported participation of robberies in the streets<sup>11</sup>. In addition, young people who have experienced an episode of violence have declared that the region where they live does not promote well-being for residents. Thus, it is essential to understand the relationship between interpersonal violence and region of residence.

One result that stands out is that the aggressors of G2 victims were usually women and known to the victim. The high number of women in the study area who perpetrated violence is a result that attracts attention. This finding may indicate a greater involvement of women in crime or perhaps the occurrence of dating physical violence. In Brazil, only recently this topic has aroused the interest of the scientific community. Youth and adolescents of both sexes can be victims of dating violence, but often have difficulty recognizing it as such and rarely seek help<sup>35</sup>. A study conducted in Recife, Brazil, found that 19.9% of adolescents had loving relationships in the last year have perpetrated an act of physical violence and 82.8% of psychological violence<sup>36</sup>. Therefore, identifying risk factors for dating violence becomes paramount to interrupt the cycle of violence, representing a potential area for future studies.

G3 was mostly composed of female adults ( $\geq 20$  years), married / in stable union or separated / widowed, living in urban or suburban areas, victims of domestic violence, where the aggressor was usually the partner, ex-partner or a family member who made use of mixed aggression, by using physical force or blunt objects, like iron bar, bottles, glasses, resulting in injury to soft tissues of face or other body regions. These results are consistent with those observed by Waiselfisz<sup>26</sup>, who pointed out parents, spouses, and partners as the main aggressors. It is quite likely that the degree of closeness between aggressor and victim may contribute to the recurrence of events<sup>1</sup>. However, it was not possible to investigate the recurrence of aggressions, since this information was not available in the records, which is an area for further studies.

Women victims of domestic violence presented as the most common clinical signs, cuts, bruises or swelling in the facial area or injuries in other body regions. Although traumas that promote soft tissue injuries are classified as mild,



it must be considered that they can affect the self-esteem of victims and generate deep emotional and social distress<sup>37</sup>. The high prevalence of lesions involving the maxillofacial complex can be explained when considering that the face is the locus of singularity and identity of the human person and that aggressions in this region are aimed to disqualify the victim's identity, acting as an intimidation factor and generating fear<sup>1,2</sup>.

Mixed aggression (physical aggression associated with the use of blunt objects) proved to be more associated with domestic violence against women. In Brazil, after analyzing the cases of violence against women attended by the Unified Health System - SUS in 2011, it was estimated that physical violence is predominant, accounting for 44.2% of cases<sup>26</sup>. A major achievement in combating violence against woman was the approval of the Federal Law No. 11.340, known as "Maria da Penha" Law<sup>38</sup> aimed at prevention of violence and criminalization of aggressors. However, although in the first year of effective enforcement, violence rates experienced a decrease, they quickly increased until the year 2010, reaching 4.6 homicides / 100,000 women, the highest level recorded so far<sup>26</sup>. These results reflect the persistence of violence against women in Brazilian society, and that the law itself is not enough to combat this public health problem in the country, bringing up the possibility of failures in protective measures and the incipient punishment of aggressors<sup>1</sup>.

Another worrying fact was that women victims of domestic violence were adults ( $\geq 20$  years), which includes an important stage of reproductive period related to child care. However, it was not possible to determine the impact of violence against women in the behavior of their children, representing a potential area for future studies. It has been reported that violence against women can affect the behavior of children, highlighting the importance of including the health care of schoolchildren through integrated interventions involving children and their mothers<sup>39,40</sup>.

The high rates of interpersonal violence among men and women in the region under study reveal the importance of directing efforts from the perspective of comprehensive and intersectoral approach to prevent new cases, provide adequate social assistance to victims and minimize the serious social consequences of violence. In addition, government agencies should be encouraged to promote opportunities of training and awareness of health professionals working in

SUS in order to identify cases of domestic violence, which sometimes can go unnoticed on the day of care.

Since this is a cross-sectional study, it was not possible to recognize causal relationships. It is also likely that the actual number of cases has been underestimated, since not all interpersonal violence victims report the occurrence and seek the service to carry out forensic examination. However, it is important to highlight the quality of information obtained from medical-legal and social records from Forensic Medicine and Dentistry Centers. Since the Brazilian legislation establishes that violence victims who have suffered some kind of injury when notifying the abuse should be forwarded to conduct forensic examination in institutions like this, the results obtained seem to represent the reality experienced by the population.

Considering the statistical analysis used in this study, it was possible to explore relations of interdependence between sociodemographic characteristics, characteristics of aggressions and patterns of injuries shown by interpersonal violence victims. The results obtained contribute for targeted interventions in view of the clusters formed, which point out victims with specific profiles that can then be addressed by health and social care services in a more direct way. The implementation of an integrated and continuous epidemiological surveillance related to the occurrence of interpersonal violence in the region under study should be encouraged in order to support the decision-making process and assess the results of the implementation of new public health policies.

## Conclusion

The results suggest that the sociodemographic and circumstantial characteristics are important factors in victimization by maxillofacial trauma and interpersonal violence, and men represent the main victims of community violence and are more likely to suffer aggression by more violent mechanisms, exhibiting more severe injuries. Moreover, women are more prone to domestic violence and to present soft tissue injuries of face or other body regions.

Therefore, public policies related to combating interpersonal violence must take into account the specific needs of each group of exposed individuals as well as circumstances under which events occur. Otherwise, these actions may be

doomed to failure for not finding strength and recognition of victims, aggressors, and society as a whole.

### **Collaborations**

IM Bernardino and KGN Barbosa participated in the acquisition and interpretation of data and in the preparation and critical review of the manuscript, and approved the final manuscript as submitted. LM Nóbrega and GMS Cavalcante participated in data acquisition and development of technical procedures for data formatting, and approved the final manuscript as submitted. EF Ferreira and S d'Avila supervised the study and participated in the conception and design of the method and critical revision of the manuscript for final approval.

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