

Maxillofacial injuries among Brazilian children and adolescents victims of traffic accidents

Lesões maxilofaciais em crianças e adolescentes brasileiros vítimas de acidentes de trânsito

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ABSTRACT

Objective

To analyze the prevalence of morbidity due to traffic accidents in children and adolescents and its relationship with maxillofacial injuries in the city of Campina Grande, Paraíba, Brazil.

Methods

This cross-sectional study analyzed 533 forensic reports of individuals aged 0-19 years, victims of external causes in Campina Grande, Brazil, in 2013. Data were collected through a form containing variables sex, age, day of week, time, type of traffic accident, injured body region, presence of fractures, maxillofacial and oral cavity injuries. The Statistical Package for Social Sciences software (SPSS) was used for data analysis. Prevalence ratios and confidence intervals at 95% were estimated with the chi-square test.

Results

There was predominance of males (75.0%) aged 15-19 years (65.0%), with association between sex and occurrence of traffic accidents ($p < 0.001$). The afternoon shift recorded 36.7% of cases of accidents involving motorcyclists (55.0%). In 25.0% of cases, there were injuries on the head and 26.7% on the face. Head and face injuries were observed in 10.0% of patients, while maxillofacial and oral cavity injuries were present in 21.7% and 6.7%, respectively. There was an association between occurrence of accident and face injuries ($p = 0.009$).

Conclusion

Traffic accidents affect mostly young male individuals, causing multiple injuries in different body areas, including maxillofacial and oral cavity injuries.

Indexing terms: Accidents, traffic. Maxillofacial injuries. Morbidity.

RESUMO

Objetivo

Analisar a prevalência de morbidade por acidentes de trânsito em crianças e adolescentes e sua relação com lesões maxilofaciais na cidade de Campina Grande, Paraíba, Brasil.

Método

Estudo transversal, que analisou 533 laudos de exames de corpo de delito de indivíduos de 0 a 19 anos vitimados por causas externas em Campina Grande, Brasil, no ano de 2013. Os dados foram coletados por meio de um formulário, contendo as variáveis sexo, faixa etária, dia da semana, horário, tipo de acidente de trânsito, região do corpo acometida, presença de fratura, lesão maxilofacial e lesão na cavidade bucal. Utilizou-se o software *Statistical Package for the Social Sciences* (SPSS) para análise dos dados. Foram estimadas as razões de prevalência e intervalos de confiança a 95%, com emprego do teste do Qui-quadrado.

Resultados

Houve predominância do sexo masculino (75,0%), e da faixa etária de 15 a 19 anos (65,0%), existindo associação entre sexo e ocorrência de acidente de transporte ($p < 0,001$). O turno da tarde registrou 36,7% dos casos e os acidentes envolvendo motociclistas 55,0%. Em 25,0% dos casos houve injúrias na cabeça e em 26,7% na face. Fratura na cabeça e face foi verificada em 10,0% da amostra, enquanto lesões maxilofaciais e na cavidade bucal estiveram presentes em 21,7% e 6,7%, respectivamente. Verificou-se associação entre ocorrência do acidente e acometimento da região da face ($p = 0,009$).

Conclusão

Os acidentes de trânsito acometem indivíduos jovens, do sexo masculino, acarretando múltiplas injúrias em distintas regiões do corpo, com lesões na região maxilofacial e cavidade bucal.

Termos de indexação: Acidentes de trânsito. Traumatismos maxilofaciais. Morbidade.

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INTRODUCTION

In recent years, a steady increase in morbidity due to external causes has been observed¹. Among them, traffic accidents stand out, since it is estimated that from 20 to 50 million people survive with different traumas².

Traffic accidents arouse great concern in the health sector due to their impact on morbidity and mortality, and, above all, for reaching young people with high number of potential years of life lost and the consequent reduction in life expectancy, as well as spending on emergency services and consequences reflected in family and social context³.

An increasing involvement of children and adolescents has been observed, especially as pedestrians and vehicle occupants up to 14 years of age, who become drivers from the age of 15⁴. In Brazil, over a hundred thousand hospitalizations for injuries resulting from traffic accidents are recorded each year, in addition to victims who are attended in emergency services and released shortly after⁵.

The maxillofacial region, as well as the facial bones that compose it, has greater vulnerability to trauma in two circumstances: car accidents and violence⁶. Specifically, in the first case, attention should be given to the age group of 0-19 years, since fractures in the maxillofacial region are constant occurrences because automobile accidents are prevalent in this population⁷.

Considering the above, this study aims to analyze epidemiological data on morbidity due to traffic accidents among children and adolescents and their relationship with maxillofacial injuries in the city of Campina Grande (PB), in 2013.

METHODS

Cross-sectional study carried out based on the analysis of 533 forensic medical reports of children and adolescents, in 2013 in the Center for Forensic Medicine and Dentistry (NUMOL) of Campina Grande, Brazil.

Data were collected by two researchers, who analyzed the following variables: gender, age, day of week, time of occurrence, type of traffic accident, body region affected, presence of fracture, maxillofacial injury and oral cavity lesion.

Descriptive statistics (absolute and percentage distributions, mean, median and standard deviation) was used. The bivariate analysis used the chi-square test. Prevalence ratios and their respective confidence intervals at 95% were estimated using the SPSS software (Statistical Package for the Social Sciences), version 18.0.

According to Resolution 466/12 of the National Health Council, the research was approved by the Research Ethics Committee of the State University of Paraiba (0443.0133.000-11).

RESULTS

Of the 533 medical reports analyzed, 60 (11.3%) were due to traffic accidents, with prevalence of male victims (75.0%). The bivariate analysis revealed an association between gender and the occurrence of traffic accidents ($p < 0.001$; PR = 3.50 [1.90 to 6.46]).

The age of the victims ranged from 0 to 19 years, with average of 14.35 years (± 5.3) and median of 17 years. The age group 15-19 years was the most affected (65.0%) (Table 1).

Table 1. Distribution of traffic accident victims by gender and age group. Campina Grande (PB), 2013.

Gender	Age (in years)								Total	
	0 to 4		5 to 9		10 to 14		15 to 19			
	n	%	n	%	n	%	n	%	n	%
Male	2	3.3	9	15.0	3	5.0	31	51.7	45	100.0
Female	3	5.0	2	3.3	2	3.3	8	13.3	15	100.0
Total	5	8.3	11	18.4	5	8.3	39	65.0	60	100.0

Figure 1 shows the distribution of occurrences according to the day of week, indicating that most of the accidents occurred on Thursdays (21.7%)

and Tuesdays (18.3%). On the other hand, the day showing the lowest number of events was Saturday (8.3%).

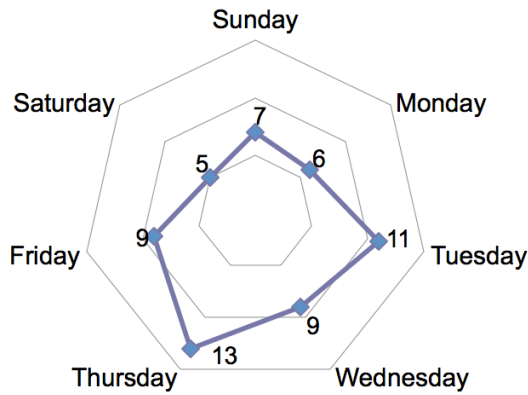


Figure 1. Percentage distribution of morbidity from traffic accidents according to the day of week. Campina Grande (PB), 2013.

As for the time of accident occurrence, in 36.7% of cases, the afternoon period prevailed followed by night

(31.7%) and morning periods (11.7%). The morning period showed the lowest reported cases (10.0%). In 10% of reports, there was no time of accident occurrence.

The analysis of the type of automotive accident showed prevalence of accidents involving motorcycles with a total of 55.0% ($n = 33$) of cases, followed by accidents involving pedestrians ($n = 16$) and vehicle occupants ($n = 11$), with 26.7% and 18.3% respectively.

For the body regions affected by some kind of injury resulting from automotive accidents, lower and upper limbs concentrated 50.0% and 40.0% of cases, respectively. It was found that 25.0% of medical reports mentioned the occurrence of injuries on the head and 26.7% on the face region (Table 2). It was found that there is a significant association between occurrence of traffic accident and involvement of the face ($p = 0.009$) and lower limbs ($p = 0.001$).

Table 2. Distribution of injuries according to the body region affected. Campina Grande (PB), 2013.

Body region	Traffic accident				Total	p-value	PR
	Yes		No				
	n	%	n	%	n	%	
<i>Head</i>							1.88
Yes	15	25.0	71	15.0	86	16.2	0.048 (0.99-3.55)
No	45	75.0	401	85.0	446	83.8	
<i>Face</i>							0.009 0.45
Yes	16	26.7	210	44.5	226	42.5	(0.24-0.82)
No	44	73.3	262	55.5	306	57.5	
<i>Upper limbs</i>							0.550 0.84
Yes	24	40.0	208	44.1	232	43.6	(0.49-1.46)
No	36	60.0	264	55.9	300	56.4	
<i>Lower limbs</i>							0.001 3.14
Yes	30	50.0	114	24.2	144	27.1	(1.81-5.43)
No	30	50.0	358	75.8	388	72.9	

The occurrence of general fracture was demonstrated in 28.3% of the study population, while head and face fractures occurred in only 10.0%.

Regarding injuries, maxillofacial injuries were present in 21.7% of cases and oral cavity injuries in 6.7% (Table 3).

Table 3. Distribution of victims according to the presence of injury according to the type of lesion. Campina Grande (PB), 2013

Variable	n	Frequency	
		n	%
<i>General fracture</i>			
Yes	17		28.3
No	43		71.7
<i>Head/Face fracture</i>			
Yes	6		10.0
No	54		90.0
<i>Maxillofacial injury</i>			
Yes	13		21.7
No	47		78.3
<i>Oral cavity injury</i>			
Yes	4		6.7
No	56		93.3

DISCUSSION

Traffic accidents are a serious public health problem, especially in Brazil, since it has high rates when compared to other countries. This reality is reason for concern, especially when children and adolescents are among victims⁸.

Traffic accidents involve substantial spending on health care provided to victims, affect economically active individuals, resulting in loss of potential years of life and in increased expenditure arising from rehabilitation of sequelae⁹.

In the present investigation, greater involvement of men was observed, a result similar to that seen in other studies^{10,11}. Probably, this male victimization occurs as a result of their greater exposure to traffic and to social and cultural behaviors of this population segment¹².

With regard to age, the results found were supported by national¹³ and international¹⁴ surveys, which indicated the age group of 15-19 years as the age group with a large number of individuals victimized by the occurrence of traffic accidents. Possible factors associated to this problem are traffic inexperience and easy acquisition of motor vehicles, especially those on two wheels.

As for the day of week, Thursday showed the largest number of cases, unlike the results from studies conducted in the state of Paraná^{15,16}, in which events were predominantly recorded on the weekends. Hypothetically, it is believed that the local reality can act decisively in the habits of young people in order to intensify the occurrence of accidents at different times.

Motorcyclists have occupied the first place among victims of traffic accidents and are at risk of death seven times higher compared to car drivers¹⁷. This assertion is confirmed by the results presented, which showed that accidents involving motorcyclists are more numerous when compared to other types of traffic accidents. Morbidity due to motorcycle accidents is quite relevant, with higher predominance in relation to vehicle occupants¹⁸.

The increased vulnerability of motorcyclists is evident, since in the collision, the occurrence of unequal shock with larger vehicles is quite frequent. It is noteworthy that the motorcyclist does not have the structure of a vehicle as protection, thus absorbing all the energy from the impact¹⁹. It is assumed that in the state of Paraíba, there is an increasing growth in the number of motorcycles and paradoxically, there is lack of investment in traffic education.

In this study, traffic accidents involving pedestrians appear as the second most recurrent type. Literature²⁰ points children as largely vulnerable due to their lower perception of danger, their mental and physical immaturity to follow traffic rules, the spirit of competition and characteristic speed, in addition to the lack of respect to the condition of pedestrian by car drivers.

The body regions most affected in traffic accidents are upper and lower limbs, followed by the head region^{21,22}. It is suggested that the higher incidence of upper and lower limbs at the age group of 0-19 years verified in this study is due to the greater exposure and lack of protection when considering traffic accidents as morbidity etiology. These results are consistent with other findings previously described²³.

Maxillofacial injuries were observed in a significant number of cases, which is consistent with the study by Pereira et al.²⁴, in which it was found that the face is commonly affected in all types of traffic accidents. In the study by Vieira et al.²⁵, the results showed that traffic accidents caused some kind of maxillofacial and / or oral cavity injury, finding corroborated by the results of this study and the results obtained by Cavalcanti et al.²⁶.

Understanding the circumstances in which traffic accidents occur, the associated factors and their magnitude and consequences becomes essential not only to highlight this tragic reality, but mainly to find solutions²⁷. These solutions must include strategies to prevent accidents to avoid the impact caused on individuals and society and because these events are considered preventable²⁸.

CONCLUSIONS

It was concluded that young males were the main victims of traffic accidents, especially involving motorcycles and injuries in the lower limbs and in the maxillofacial region, with a small number of cases of injury in the cavity oral.

There is need to strengthen health services and other relevant sectors in order to act on factors that determine the occurrence of these events and minimize their occurrence.

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Collaborators

LG Farias, RVS PEREIRA, LMT BRANDT and TBS OLIVEIRA participated in the study design, data collection

and writing of the manuscript. AFC XAVIER and AL CAVALCANTI participated in the conception and study design, coordination of data collection, statistical analysis and writing of the manuscript.

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