

# CUIDADO É FUNDAMENTAL

UNIVERSIDADE FEDERAL DO ESTADO DO RIO DE JANEIRO • ESCOLA DE ENFERMAGEM ALFREDO PINTO

PESQUISA

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## Transportation accidents among children, adolescents and young people: epidemiological study

Acidentes de transporte terrestre entre crianças, adolescentes e jovens: estudo epidemiológico

Transporte de accidente entre los niños, adolescentes y young: estudio epidemiológicos

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### ABSTRACT

**Objective:** To analyze traffic accidents occurred in the age group 0-24 years treated at the Emergency Room of Cuiabá City in 2013. **Method:** Cross-sectional study with data captured through a closed form. Data analysis was done using Epi-Info. **Results:** Of the 2,122 calls, 67.9% were males aged 15-24 years (82.1%), 49.7% occurred on weekends, and 9.6% occurred in December, highlighting the accidents with motorcycle/tricycle (71.0%), prevailing trauma of the upper limbs (30.4%) with immediate physical sequelae in 0.5% of the victims. Regarding the outcome, (95.7%) were discharged after treatment, and there were 7 deaths (0.3%). **Conclusion:** The significant occurrence of traffic accidents attended by the emergency service and emergency at hand, involving the study population, highlights the need for specific policies and prevention strategies.

**Descriptors:** Traffic accidents; Child; Adolescent; Young; Epidemiology.

### RESUMO

**Objetivo:** Analisar acidentes de trânsito ocorridos com pessoas na faixa etária de 0 a 24 anos, atendidas no Pronto-Socorro Municipal de Cuiabá em 2013. **Método:** Estudo transversal com dados capturados por meio de um formulário fechado. A análise dos dados foi feita por meio do Epi Info. **Resultados:** Dos 2.122 atendimentos, 67,9% foram do sexo masculino, com idade entre 15 e 24 anos (82,1%), e 49,7% ocorreram nos finais de semana, sendo que 9,6% ocorreram em dezembro, destacando-se os acidentes com motocicleta/triciclo (71,0%), prevalecendo trauma de membros superiores (30,4%) com seqüela física imediata em 0,5% das vítimas. Em relação ao desfecho (95,7%), recebeu alta após o atendimento, e houve sete óbitos (0,3%). **Conclusão:** A ocorrência significativa de acidentes de trânsito atendidos pelo serviço de urgência e emergência em pauta, envolvendo a população do estudo, evidencia a necessidade de políticas e estratégias de prevenção específicas.

**Descritores:** Acidentes de trânsito, Criança, Adolescente, Jovem, Epidemiologia.

### RESUMEN

**Objetivo:** Analizar los accidentes de tráfico se produjo en el grupo de edad de 0-24 años atendidos en la sala de emergencias de la ciudad de Cuiabá, en el año 2013. **Método:** Estudio transversal con datos capturados a través de una forma cerrada. El análisis de datos se realizó usando Epi Info. **Resultados:**

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De las 2.122 llamadas, el 67,9% fueron varones de 15-24 años (82,1%) y el 49,7% se produjeron los fines de semana, y corrieron 9,6% en diciembre, destacando - si los accidentes con motocicleta / triciclo (71,0%), predominando el trauma de las extremidades superiores (30,4%) con secuelas físicas inmediata en el 0,5% de las víctimas. En cuanto a los resultados (95,7%) fueron dados de alta después del tratamiento, y no hubo 7 muertes (0,3%). **Conclusión:** La presencia significativa de los accidentes de tráfico atendidos por el servicio de emergencia y de emergencia a la mano, con la participación de la población de estudio, pone de relieve la necesidad de políticas específicas y estrategias de prevención.

**Descriptores:** Accidentes de tráfico, Niño, Adolescente, Joven, Epidemiología.

## INTRODUCTION

Currently, among the accidental causes that affect the population, transportation accidents are highlighted in both morbidity and mortality.<sup>1-3</sup> Among these, there is a considerable increase in ground transportation accidents, known as traffic accidents, mainly in the child-juvenile population, constituting a public health problem.<sup>4-6</sup>

In this context, it is necessary to consider not only the occurrence of accidents but also the consequences, such as physical and psychological, in the short/long term that interfere in aspects of the social life of young people: school dropout, sports, relationships, work, depression, among others.<sup>7-8</sup>

Nowadays, it is possible to obtain data on mortality from transportation accidents in the Mortality Information System (MIS) of the Ministry of Health<sup>9</sup>, as well as in the Hospital Information System (HIS) in the Unified Health System (UHS).<sup>10</sup> Another important source of data collection is the Violence and Accident Surveillance System (VASS) implemented in 2006 by the Ministry of Health with the purpose of collecting data and creating information on accidents and violence in order to contribute to public health policies addressed to these serious public health problems, aiming at prevention.<sup>11</sup> However, the demand for emergency services, especially involving children, adolescents and young people, is growing<sup>12-13</sup> and that do not always entail hospitalization and/or death. This is a poorly known morbidity, since it does not feed official information systems.

Thus, in order to analyze the morbidity of traffic accidents occurring in the infant and juvenile population of Cuiabá, which demand urgent and emergency care, it is necessary to seek another source of information, such as the data sheets from the emergency services.

In this sense, the present research aimed to analyze traffic accidents and their victims in the population of children, adolescents and young people (0 to 24 years old), attending a reference emergency/emergency service in the year 2013.

## METHOD

A descriptive, cross-sectional study developed at the Municipal Emergency Hospital of Cuiabá (HPSMC in Portuguese), whose population was composed of children, adolescents and young people (0 to 24 years of age), victims of traffic accidents, in the year 2013. The choice of HPSMC is justified because it is a reference to the State in this type of urgent and emergency care. All data sheets for the year 2013 (January 01 to December 31, 2013) were raised, selecting

those that corresponded to the inclusion criteria of the survey: traffic accident victim, age from 0 to 24 years, attended service in the year 2013. For the data collection, a questionnaire with 25 closed questions was used, containing the following parts: victim's data (date of birth, age at the day of the accident, age at age group, sex, municipality where the victim lived), accident-related data (location, time of day/day of the week/month/where it occurred, type of accident - Codes V01 to V99 of ICD-10, circumstances of the accident), attendance data (location, time elapsed between accident and attendance in the health service, who brought the victim to the health service), accident consequences (main injury acquired and bodily region affected, immediate physical sequelae) and clinical evolution of the victim (discharge, hospitalization, immediate death or in the course of the care, referral to the health service, evasion). It was considered as an immediate physical sequela any kind of trauma that determines a physical limitation. The data were processed and analyzed in the Epi-Info program, version 3.4.3. The chi-square test was used for the bivariate analyzes, considering p-value less than 0.05. Written authorization from HPSMC was obtained for data collection and approval by the Research Ethics Committee given HUJM on September 25, 2013, under the opinion 405.578, CAAE: 20492413.4.0000.5541.

## RESULTS AND DISCUSSION

There were 2,122 ground transportation accidents in 2013, involving children, adolescents and young people as victims, with a predominance of males (67.9%) and the 15-24 age group (82.1%) (Table 1).

**Table 1** - Distribution of transport accidents in the population aged 0 to 24, attended by the HPSMC, according to the sex and the age group of the victims. Cuiabá/MT, Brazil, 2013. p = (0,000).

Age group of victims (in years)	Gender				Total	
	Female		Male		N°	%
	N°	%	N°	%		
0 to 4	35	5.1	57	3.9	92	4.3
5 to 9	44	6.4	73	5.1	117	5.5
10 to 14	53	7.8	119	8.3	172	8.1
15 to 19	205	30.1	401	27.8	606	28.6
20 to 24	345	50.6	790	54.9	1135	53.5
Total	682	100.0	1440	100.0	2122	100.0

Source: authors

The period of the day in which the accidents occurred was not included in 92.3% of the files. The accidents occurred on Sundays (19.0%), Saturdays (16.0%) and Fridays (14.7%), followed by Tuesdays (13.9%), Thursdays (12.7%), Mondays (12.0%) and Wednesdays (11.6%); months with the highest incidences were December (9.6%), June (9.3%) and March (9.2%), followed by April (9.0%), May (8.2%), July (7.8%), August (8.2%), September (7.9%), January (7.8%), February (7.8%), October (2%).

Motorcycle/tricycle occupants (71.0%) predominated, followed by car/truck occupants (10.5%), cyclists (7.6%) and pedestrians (7.5%) (Table 2). The occupant motorcycle/tricycle victims accounted for 67.0% of women and 72.5% of men (p = 0.000) (Table 2).

**Table 2** – Distribution of transport accidents, according to the type of accident suffered (group - subgroups of causes of ICD-10), and the sex of the victims. Cuiabá/MT, Brazil, 2013. p = (0,000).

Type of accident suffered	Gender					
	Female		Male		Total	
	N°	%	N°	%	N°	%
Pedestrian traumatized in transport accident	61	8.9	99	6.9	160	7.5
Cyclist traumatized in transport accident	32	4.7	130	9.0	162	7.6
Occupant motorcycle/tricycle traumatized in transport accident	457	67.0	1044	72.5	1501	71.0
Occupant car/truck traumatized in transport accident	101	14.9	123	8.5	224	10.5
Occupant heavy vehicle traumatized in transport accident	2	0.3	7	0.5	9	0.4
Occupant bus traumatized in transport accident	11	1.6	3	0.2	14	0.6
Other transport accidents	2	0.3	16	1.1	18	0.8
Other transport/ unspecified accidents	16	2.3	18	1.3	34	1.6
Total	682	100.0	1440	100.0	2122	100.0

Source: authors

There was a greater number of motorcycle / tricycle occupant victims in the 20-24 age group (83.3%) and 15-19 age group (76.1%). And those with car occupants of 0 to 4 years (24.0%), cyclists in the range of 10 to 14 years (36.6%), pedestrians (5 to 9 years old) (38.4%) and draws attention to occupant motorcycle / tricycle between 0 and 4 years old (29.3%) (p = 0.000) (Table 3).

**Table 3** – Distribution of transport accidents, according to the type of accident suffered (group - subgroups of causes of ICD-10) and age group of the victims. Cuiabá/MT, Brazil, 2013. p = (0,000)

Transport Accident Suffered	Age group of victims (in years)											
	0 to 4		5 to 9		10 to 14		15 to 19		20 to 24		Total	
	N°	%	N°	%	N°	%	N°	%	N°	%	N°	%
Pedestrian traumatized in transport accident	23	25.0	45	38.4	26	15.1	34	5.6	32	2.8	160	7.5
Cyclist traumatized in accident transport	13	14.1	36	30.8	63	36.6	27	4.4	23	2.0	162	7.6
Occupant motorcycle/tricycle traumatized in transport accident	27	29.3	21	18.0	46	26.7	461	76.1	946	83.3	1501	71.0
Car and truck traumatized in transport accident	22	24.0	12	10.2	26	15.1	64	10.6	100	8.8	224	10.5
Occupant of heavy vehicle traumatized in transport accident	1	1.1	-	-	1	0.6	1	0.2	6	0.6	9	0.4
Occupant bus traumatized in transport accident	1	1.1	-	-	2	1.2	3	0.5	8	0.7	14	0.6
Other transport accidents	-	-	-	-	8	4.7	7	1.1	3	0.3	18	0.8
Other transport/unspecified accidents	5	5.4	3	2.6	-	-	9	1.5	17	1.5	34	1.6
Total	92	100.0	117	100.0	172	100.0	606	100.0	1135	100.0	2122	100.0

Source: authors

The first care of the victims was concentrated in the health institution (58.7%), with the victims being brought by the Mobile Emergency Care Service (MECS) (41.5%), followed by a group of victims conducted by the mother herself (13.0%).

There was a higher proportion of upper limb trauma (30.4%), lower limbs (25.1%) and head (17.7%). It was also observed lower limb burns due to motorcycle exhaust (0.1 %) (Table 4). The sequel had a higher proportion in upper limb traumas (0.5%), p = 0.000 (Table 4).

**Table 4** – Distribution of accidents in the population aged 0 to 24, attended by HPSMC, according to the consequences of the accident: type of injury and body region affected (ICD-10) and immediate physical sequel. Cuiabá/MT, Brazil, 2013. p = (0,000).

Injury/body region reached	Immediate Physical Sequel							
	Yes		No		Ignored		Total	
	N°	%	N°	%	N°	%	N°	%
Head trauma	1	9.1	371	17.7	4	26.7	376	17.7
Neck trauma	-	-	74	3.5	-	-	74	3.5
Thoracic trauma	-	-	70	3.3	1	6.7	71	3.3
Trauma of the abdomen, back, lumbar spine and pelvis	-	-	154	7.3	1	6.7	155	7.3
Upper limb trauma	5	45.5	639	30.5	2	13.3	646	30.4
Lower limb trauma	3	27.2	525	25.0	5	33.3	533	25.1
Trauma in multiple regions	2	18.2	203	9.7	-	-	205	9.7
Trauma, unspecified	-	-	52	2.5	2	13.3	54	2.5
Burning head/neck/trunk/ Upper Limbs/ Lower Limbs	-	-	2	0.1	-	-	2	0.1
Other effects of external causes/not specified	-	-	6	0.3	-	-	6	0.3
Total	11	100.0	2096	100.0	15	100.0	2122	100.0

Source: authors

A high 95.7% of the victims were discharged, 2.5% were hospitalized, 1.0% referred to other health services, while evasion was 0.5%. Deaths represented 0.3%.

The predominance of land transport accidents in this population group coincides with the results of other surveys.<sup>14-15</sup> Studies described in the literature have shown that traffic accidents are a serious public health problem and contribute to high rates of morbidity and mortality in the child and adolescent population.<sup>1-2</sup>

The occurrence of traffic accidents in a greater proportion of adolescents and young people coincides with other studies.<sup>3,5</sup> Several authors point to factors such as distraction, failure to comply with traffic regulations, poor signalling, use of electronic devices, sleepiness, emotional immaturity, inexperience, search for sensations, discoveries and new experiences, impulsivity, consumption of alcohol substances and experimentation of illicit drugs, which make them more vulnerable to the occurrence of these events.<sup>2,16-17</sup>

Studies also found that males are more vulnerable when compared to females.<sup>3,5</sup> The predominance of males is probably due to sociocultural issues, where men are given more freedom, with less direct supervision of parents/guardians, and greater vulnerability to risky driving.<sup>18-19</sup> In this sense, there is a need for specific strategies and policies, delineated from the socio-cultural dimension of family and society.

It was verified in the present study the absence of data in the attendance records regarding the period of the day of the occurrence of the accidents. Authors who evaluated the medical records of school hospitals in Brazil detected poor quality in most of the records studied and the non-incorporation of new technologies provided by information science.<sup>20</sup> The lack of quality in the records of the accidents hinders the formation of a database, which allows identification and planning of the assistance in the assistance services to the victims.

Study also points to a higher frequency of traffic accidents on weekends<sup>19</sup>, which can be explained by the fact that families leave with their children to enjoy themselves in vehicles that are sometimes unfit for transport or carry smaller children on motorcycles, in violation of traffic laws.

As for the fact that adolescents and young people are victims of traffic accidents at weekends, literature indicates that the traffic conditions, lack of qualification or consent of family members, speed abuse and non-compliance with traffic legislation are a risk, given that on weekends, streets and avenues have less intense traffic.<sup>21-22</sup> Associated with behavior in traffic, another research carried out with the child and adolescent population points to a greater chance of road traffic accidents by motorcyclists on Sundays, Saturdays and Fridays due to the abuse of alcoholic beverages.<sup>5</sup> According to the 2<sup>nd</sup> National Survey on alcohol and drugs conducted in 2006 and 2012, the onset of "drinking" is becoming more precocious and women are drinking more.<sup>23</sup> It is suggested that strict supervision must be carried out in areas frequented by this population in order to repress the association of alcohol and driving, the expansion of educational and awareness campaigns in places frequented by adolescents and young people, and also through communication vehicles and new technologies such as WhatsApp.

The highest incidence of these events in the months of December, June and March coincides with the period of

vacations and holidays, such as Christmas, June holidays, return to school and work, when children, adolescents and young people are more exposed. A similar study carried out from December 2007 to February 2008, in medical records in the Department of Traumatology of the Emergency Department of the Base Hospital of São José do Rio Preto-SP, with patients victims of traffic accidents involving motorcycles, a higher incidence was found in December.<sup>24</sup> Identifying the most frequent months of traffic accidents contributes to the organization of services and the planning of interventions, as well as the development of preventive actions such as: more efficient signalling, greater supervision and agility by the competent agencies in streets and high traffic routes, development of projects aimed at traffic education for the child and youth population, participation of stores and commerce in general, guiding and facilitating access to services in an organized way, contributing to a more efficient vehicle traffic.

The predominance of traffic accidents involving motorcycles is compatible with a study carried out in Goiânia (GO), with adolescents and young people, from August 2005 to August 2006, attended at the Emergency Hospital, which also evidenced road traffic accidents by motorcycles, whose drivers were less than eighteen years of age.<sup>19</sup>

The significant number of minor victims of traffic accidents by motorcycle also coincides with research developed in an emergency service located in the city of Teresina, Piauí, in which victims in the age group of 5 to 14 years were identified in the condition of drivers<sup>25</sup>, which suggests driving prohibited by persons under 18 years of age.

Among road traffic accidents, those involving motorcyclists also stand out in another study.<sup>26</sup> Authors point out that the great number of accidents involving motorcycle drivers is due to the fact that this vehicle has, as its main features, speed, agility, low fuel consumption and ease of acquisition in relation to cars, being used in leisure and as a working tool.<sup>27</sup>

Another fact that may justify the incidence of traffic accidents with motorcycles is the disorderly growth of the construction works in the pre-World Cup period, in which streets and avenues presented in Cuiabá enormous holes, lack of signs without any traffic orientation, recklessness of motorcyclists and disrespect to traffic laws.

Considering that most motorcycle accidents involve adolescents and young people, there is an urgent need for educational actions in awareness campaigns in schools, universities, leisure and entertainment environments on the risks to which they are exposed. There is a need to hold criminals accountable, enforcing traffic laws for acts of recklessness and malpractice, rigorous enforcement of defensive driving with a view to preventing or minimizing the consequences of these events, adopting rigorous supervision of driving schools regarding driver training, signalling streets and roads, speed bump painting and daily maintenance of signalling equipment.

It is observed in this study the occurrence of motorcycle accident victims among children aged 0 to 4 years. A study carried out in the city of Teresina, Piauí, in 2006 identified

children that were victims of motorcycle accidents as driver (0.33%) and passenger (7.41%)<sup>25</sup>, resembling this research. These results indicate the transport of children under seven years old on motorcycles, on their lap, between two people and even on the lap of another child, exposing them to the risk of losing their balance in fast and unsafe maneuvers, putting their lives at risk.

According to the Brazilian Traffic Code (BTC)<sup>28</sup>, article 244, the transportation of children under 7 years of age is prohibited by Brazilian traffic legislation, which results in a serious infraction, a sum of seven points in the National Driver's License (NDL), driver's license seizure and loss of the right to drive. After the age of 7 years, children can be transported by motorbikes, but several rules must be respected. In its article 55, the BTC discusses the use of safety equipment by drivers and passengers including helmets that must be suitable for motorcycle and adjusted to the head, with reflective strip, visor and Inmetro seal. It is also recommended the use of clothing such as: high boots for ankle protection, leather jacket, long trousers of resistant fabric and gloves suitable for the motorcycle. There is an urgent need for strict enforcement of these laws as well as guidelines for drivers on the risks of transporting minors and awareness of the use of helmets and appropriate clothing.

The use of the motorcycle by women is also reported by a survey conducted in the city of Maringá in 2005, from the records in Traffic Accident Reporting Bulletins, which found the female involved in traffic accidents, in the age group up to 20 years, and one of the vehicle types used was the motorcycle (26.2%).<sup>29</sup> In recent years, there has been an increasing number of women using this type of vehicle as a means of transportation, due to the greater insertion of the female gender in the work and the ease of movement to daily activities such as supermarkets, schools, universities and places of leisure and entertainment, as well as the low cost of vehicle maintenance. Therefore, guidance measures should be implemented for this group.

In addition to the motorcycle, in this study, the presence of car occupants as victims in a transportation accident stands out. Survey conducted in 2012 with individuals up to 19 years of age attended by transportation accidents in a hospital in the South Zone of the city of São Paulo - SP identified victims by automobiles in the frequency of 44.2%.<sup>18</sup> The survey carried out in the general hospital in the interior of Bahia in 2009 also showed the occurrence of accidents with car occupants, whose victims were children, adolescents and young people (21.9%)<sup>30</sup>, which suggests the importance of the use of safety equipment, regardless of whether it is a driver or passenger.

It was also verified, in this research, an appreciable number of victims of *trampling*. A study carried out in 2012, in the city of São Paulo - SP, pointed out that the majority of victims of traffic accidents were composed of pedestrians.<sup>18</sup> The occurrence may result from a lack of safety when crossing the streets and avenues due to lack of crosswalks or bad maintenance, poor electronic signalling, lack of accompaniment of an adult during the crossing, disrespect to the signalling by the drivers, or even

the bad pedestrian habit of not using crosswalks in high traffic places. It is, therefore, important to continuously develop traffic-oriented campaigns in different settings, such as nurseries, schools and universities, as well as to seek the participation of professionals involved with this population, discussing widely with the entire society about ways to prevent these events.

The centralization of the first service at the health institution may have resulted from its reference to emergency care in the capital and throughout the state and even to other countries bordering the state.

In relation to the victims being brought by the emergency mobile service, studies also reveal a significant contribution of the Mobile Emergency Care Service in the effective practice of health care, since it is a service that provides care with speed and agility, seeking the preservation of life and reduction of sequelae.<sup>31</sup> In this sense, the need for continuous investment in professional training and, consequently, quality of care is emphasized.

The fact that there are no records in the attendance records regarding the time elapsed between the accident and the attendance compromises the identification of critical points that could support the planning, the elaboration of strategies and knowledge of the severity of these events. It is relevant to note the importance of the commitment of the professionals involved to correctly fill out the records, since they represent a valuable document of the assistance provided and as a source of information for the health and research institution itself.

Regarding the fact that most of the lesions occurred in the upper limbs, a survey carried out in the period 2008 to 2009 with motorcycle accident victims, which included adolescents and young people, identified that most of the lesions occurred in extremities (80.4%), followed by lesions in the cephalic region (15.5%), considered as mild lesions, a result that is in line with the present case<sup>32</sup>, a fact that is justified by the reflex of support with the limbs in the event of falls or impacts, as well as greater lack of protection of the upper and lower limbs. In this sense, supervision and guidance on the importance of routine use of safety equipment become essential.

The occurrence of cranial-encephalic trauma (CET) coincides with a study carried out in the trauma department of the Emergency Department of the Base Hospital of São José do Rio Preto, from 2007 to 2008, in which cranial trauma predominated, mainly due to the fact that accidents involve the use of the motorcycle, for the most part.<sup>24</sup> The trauma in the cephalic region, more easily occurred among motorcycle victims, awakens the correct use of the helmet, and its validity is observed, from three years to five years, depending on the manufacturer's mark, if there is no impact on the equipment. Transit with this expired item disrespects the Brazilian Traffic Code<sup>28</sup>, in its Article 244 and the National Traffic Council (Contran), in its Resolution 203, which constitutes a very serious infraction, subject to a fine, a sum of five points in the National Driver's License (NDL) and suspension / withdrawal of the NDL. It is necessary to emphasize the habit of motorcycle riders and passengers

that ride without a helmet, or to use it improperly (raised on the forehead or even carrying on the arm), which demands urgent measures of surveillance in order to curb this habit that compromises the safety of the driver and passenger.

Sequelae were also observed in a study developed at the emergency service in the city of Teresina, Piauí, in the age group of 15 to 24 years, with motorcycle accident victims. Of a total of 49.5% of those injured with sequelae, 80,7% were temporary incapacitating and 19.2% permanent.<sup>25</sup> In the case of children, adolescents and young people, it is essential to plan actions aimed at preventing these diseases and adopting protocols to care for the victims, thus reducing the economic and social expenses resulting from accidental trauma.

The high rate of discharge from the emergency department, with a low proportion of hospitalization and death, is similar to a study carried out in 2008, in the emergency services of the Regional Health Hospitals of Mato Grosso and Grande Cuiabá, where the discharge represented 59.5%, hospitalization 24.2% and death 6%.<sup>33</sup> However, the presence of death raises the reflection on the Potential Years of Life Lost as a result of this type of event that affects adolescents and young people, at productive ages<sup>34</sup>, and could be avoided if prevention measures were taken by drivers and all those involved in the transit scenario, including enforcement measures.

Regarding hospitalization, it is necessary to consider the costs for the public health system.<sup>35</sup> A study carried out in São José dos Campos (SP), in the period of January 1 and June 30, 2003, assessed UHS direct expenditures with hospital admissions and identified that traffic accidents were responsible for average hospitalization expenditures (R\$ 614.63), with an average time of 7.7 days and a daily cost of R\$ 80.21.<sup>36</sup> These data reflect the need for reconsideration on the expenses with treatment and recovery of the victims, resources that could be channelled for other purposes, since these are preventable causes.

## CONCLUSION

The present study aimed to analyze the transport accidents in the population of children, adolescents and young people who are attending a reference emergency/emergency service.

Of the 2,122 attendances due to traffic accidents, the majority of the victims were adolescent and young men, coming from the capital, whose accidents occurred more frequently on weekends and in the months of December, June and March. There was a predominance of an accident involving a motorcycle/tricycle occupant, followed by occupants of a car/truck, cyclists, pedestrians, among others. It was observed that the first care is centered on the health institution, brought by the Mobile Emergency Care Service. It was not possible to determine the time between the accident and the attendance due to lack of record of the time of the accident. There was a large proportion of upper limb trauma, followed by lower limbs and head. Burns on lower limbs were also observed by motorcycle exhaust. Higher sequelae rates were identified in upper limb traumas.

Most of the victims evolved to discharge after care, but there were 7 deaths.

Considering the high number of adolescent and young motorcyclists who are victims of traffic accidents, which require urgent/emergency care, the need to design specific public policies, as well as the planning of strategies, the creation of care protocols, supervision by competent bodies and institutions responsible for training new drivers, and compliance with traffic laws through driver accountability and specific prevention strategies.

It is also essential to implement the use of technology in the dissemination of guidelines and information regarding the prevention of these diseases.

It is also suggested the need to train health professionals with regard to care records, so that more complete and detailed studies can be done.

Involving society in its various segments (organizations and social movements, and other entities in related areas), developing partnerships with government agencies of the legislative and judicial executive branches with specific policies has shown a potential for strengthening preventive measures that may reduce the morbidity of this serious public health problem.

## REFERENCES

1. Matos KF de, Martins CBG de. Mortalidade por causas externas em crianças, adolescentes e jovens: uma revisão bibliográfica. *Revista Espaço para a Saúde*. 2013; 14(1-2):82-93.
2. Morais Neto OL, Montenegro MMS, Monteiro RA, Siqueira Júnior JB, Silva MMA da, Lima CM de, et al. Mortalidade por Acidentes de Transporte Terrestre no Brasil na última década: tendência e aglomerados de risco. *Ciênc Saúde Coletiva*. 2012; 17(9):2223-36.
3. Marín-Leon L, Belon AP, Barros MBA de, Almeida SDM de, Restitutti MC. Tendência dos acidentes de trânsito em Campinas, São Paulo. Brasil: importância crescente dos motociclistas. *Cad Saúde Pública*. 2012; 28(1):39-5.
4. Malta DC, Mascarenhas MDM, Silva MMA, Macário EM. Perfil dos atendimentos de emergência por acidentes envolvendo crianças menores de dez anos - Brasil, 2006 a 2007. *Ciênc Saúde Coletiva*. 2009; 14(5):1669-79.
5. Cabral APS, Souza WV, Lima MLC. Serviço de Atendimento Móvel de Urgência: um observatório dos acidentes de transportes terrestre em nível local. *Rev. bras. epidemiol.* 2011; 14(1):03-14.
6. Almeida RLF, Filho JGB, Braga JU, Magalhães FB, Macedo MCM, Silva KA. Via, homem e veículo: fatores de risco associados à gravidade dos acidentes de trânsito. *Rev Saúde Pública*. 2013; 47(4):718-31.
7. Magalhães SHT, Loureiro SR. Acidentes de trânsito e variáveis psicossociais - uma revisão de literatura. *Medicina*. 2007; 40(3):345-51.
8. Françoso LA, Coates V. Repercussões sociais das sequelas físicas em adolescentes vítimas de acidentes de trânsito. *Adolesc Saúde*. 2008; 5(1): 6-13.
9. Ministério da Saúde/SVS - Sistema de Informações sobre Mortalidade - SIM DATA SUS 2011. [acesso 2014 Out 01]; Disponível em: <http://tabnet.datasus.gov.br/cgi/tabci.exe?idb2012/c09.def>
10. Ministério da Saúde/SE/Datasus - Sistema de Informações Hospitalares do SUS - SIH/SUS. 2013. [acesso 2014 Out 01]; Disponível em: <http://tabnet.datasus.gov.br/cgi/tabci.exe?idb2012/d30.def>
11. Brasil. Ministério da Saúde. Secretaria de Vigilância em Saúde. Departamento de Análise de Situação de Saúde. *Viva: vigilância de violências e acidentes, 2006 e 2007*. Brasília, DF: Ministério da Saúde, 2009.
12. Garcia, DS. Crianças atendidas em pronto-atendimento e pronto-socorro por causas externas: subsídios para melhoria da assistência. *Enfermagem em Foco*. 2011; 2(2):128-32.

13. Credo PFD, Felix JVC. Perfil dos pacientes atendidos em um hospital de referência ao trauma em Curitiba: implicações para a enfermagem. *Cogitare Enferm.* 2012; 17(1):126-31.
14. Fraga AM, Fraga GP, Stanley C, Costantini TW, Coimbra R. Crianças em perigo: mortes injúrias entre crianças em San Diego County. *Eur J Epidemiol.* 2010; 25(3):211-7.
15. Nascimento JL, Ribeiro RS, Pereira AJ. Um estudo sobre as irregularidades no trânsito em ARAGUAÍNA (TO) e a grande ocorrência de acidentes na área urbana da cidade. *Revista Tocantinense de Geografia.* 2013; 2(3):1-15.
16. Abreu AM, Lima JMB, Matos LN, Pillon SC. Uso de álcool em vítimas de acidentes de trânsito: estudo do nível de alcoolemia. *Rev. Latino-Am. Enfermagem.* 2010; 18(Spec):513-20.
17. Pereira IG, Neves FS. Comportamentos de risco: uma revisão bibliográfica sobre as causas de acidentes de trânsito nos últimos 10 anos. *Rev. Cereus.* 2013; 5(2):73-89.
18. Gorios C, Souza RM de, Gerolla V, Maso B, Rodrigues CL, Armond JE de. Acidentes de transporte de crianças e adolescentes em serviço de emergência de hospital de ensino, Zona Sul da cidade de São Paulo. *Rev Bras Ortop.* 2014; 49(4):391-95.
19. Caixeta CR, Minamisava R, Oliveira LMAC de, Brasil, VV. Morbidade por acidentes de transporte entre jovens de Goiânia, Goiás. *Ciênc. saúde coletiva.* 2010; 15(4):2075-84.
20. Silva FG, Tavares-Neto J. Prontuário dos Hospitais de Ensino do Brasil. *Revista Brasileira de Educação Médica.* 2007; 31(2):113-26.
21. Martins CBG, Andrade SM. Epidemiologia dos acidentes e violências entre menores de 15 anos em município da região sul do Brasil. *Revista Latino Am Enf.* 2005; 13(4): 530-37.
22. Oliveira APP, Abreu AMM, Paixão LAR, Faria VS. Possível impacto da “Lei Seca” nos atendimentos a vítimas de acidentes de trânsito em uma unidade de emergência. *Esc. Anna Nery.* 2013; 17(1):54-9.
23. Laranjeira R, Madruga CS, Pinsky I, Caetano R, M. et al. II Levantamento Nacional de Álcool e Drogas - Consumo de Álcool no Brasil: Tendências entre 2006/2012. São Paulo: Instituto Nacional de Ciência e Tecnologia para Políticas Públicas de Álcool e Outras Drogas (INPAD), UNIFESP. 2014. [acesso em 31 janeiro 2015]. Disponível em: <http://inpad.org.br/wp-content/uploads/2014/03/Lenad-IIRelat%C3%B3rio.pdf>.
24. Canova JCM de, Bueno MFR, Oliver CCD, Souza LA, Belati LA, Cesarino CB, et al. Traumatismo cranioencefálico de pacientes vítimas de acidentes de motocicletas. *Arq Ciênc Saúde.* 2010; 17(1):9-14.
25. Santos AMR, Moura MEB, Nunes BMVT, Leal CFS, Teles JBM. Perfil das vítimas de trauma por acidente de moto atendidas em um serviço público de emergência. *Cad. Saúde Pública.* 2008; 24(8):1927-38.
26. Souza AP, Morteau ECM, Mendonça FF. Caracterização dos acidentes de trânsito e de suas vítimas em Campo Mourão, PARANÁ, BRASIL. *Revista Espaço para a Saúde, Londrina.* 2010; 12(1):16-22.
27. Bastos YGL, Andrade SM, Soares DA. Acidentes de trânsito e vítimas atendidas em serviço pré-hospitalar. *Cad. Saúde Pública.* 2005; 21(3):815-22.
28. Brasil. Lei 9503/97 | Lei nº 9.503, de 23 de setembro de 1997. Institui o Código de Trânsito Brasileiro. *Diário Oficial da República Federativa do Brasil*, 23 de setembro de 1997. [acesso 2014 Out 12]; Disponível em: [http://www.planalto.gov.br/ccivil\\_03/leis/l9503.htm](http://www.planalto.gov.br/ccivil_03/leis/l9503.htm).
29. Davantel PP, Pelloso SM, Carvalho MDB de, Oliveira NLB de. A mulher e o acidente de trânsito: caracterização do evento em Maringá, Paraná. *Rev Bras Epidemiol.* 2009; 12(3): 355-67.
30. Nery AA, Alves MS, Rios MA, Assunção PN, Filho SAM. Perfil epidemiológico da morbimortalidade por causas externas em um hospital geral. *Rev enferm UFPE on line.* 2013; 7(2):562-71.
31. Costa PC, Miranda JOF, Souza KAO. Pediatric prehospital assistance conducted by the mobile emergency care service (SAMU). *J. res.: fundam. care. Online.* 2013; 5(4):614-21.
32. Parreira JG, Gregorut F, Perlingeiro JAG, Solda SC, Asséf JC. Análise comparativa entre as lesões encontradas em motociclistas envolvidos em acidentes de trânsito e vítimas de outros mecanismos de trauma fechado. *Rev Assoc Med Bras.* 2012; 58(1):76-81.
33. Ferreira Junior PA, Oliveira EC, Ribeiro MCSA. Morbidade por acidentes e violências nos Hospitais Regionais de Saúde de Mato Grosso e nos Prontos-Socorros da Grande Cuiabá. *Rev. Bras. Pesq. Saúde.* 2013; 15(3): 62-71.
34. Vanegas YLL, Cárdenas MAS. Años potencialmente perdidos por accidente de tránsito, Colombia. *Revista CES Salud Pública.* 2011; 2(2):159-68.
35. Mesquita GV, Oliveira FAFV, Santos AMR, Tapety FI, Martins MCC, Carvalho CMRS. *Texto Contexto Enferm.* 2009; 18(2): 273-9.
36. Melione LP, Mello Jorge MHP. Gastos do Sistema Único de Saúde com internações por causas externas em São José dos Campos, São Paulo, Brasil. *Cad Saúde Pública.* 2008; 24(8):1814-24.

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