Analysis of deaths from traffic accidents in a Brazilian capital

Maria Stella Jakeline Alves de Farias[1], Henrique Pinheiro Afonso Cavalcante[1], Yuri Silva Toledo Brandao[1]*, Dyego Taffarel Rosendo de Barros[1], Divanise Suruagy Correia[2], Jairo Calado Cavalcante[2]

[1] Student of the Faculty of Medicine, Federal University of Alagoas; Campus of Maceio, Maceio-AL, Brazil.
[2] Professor of the Faculty of Medicine, Federal University of Alagoas; Campus of Maceio, Maceio-AL, Brazil.

Corresponding author: Yuri Silva Toledo Brandao, Student of the Faculty of Medicine, Federal University of Alagoas; Campus of Maceio, Maceio-AL, Brazil.

ABSTRACT

Introduction: Over the past 60 years, the urbanization process has intensified around the world. It is estimated that each year 1.2 million people die due to traffic accidents (TA) in the world. Annually, about 37.000 people die and other 180.000 are hospitalized due to TA in Brazil. The frequency of deaths in Brazilian States and Capitals and how they occur, comply with different standards and specific locations. Thus, it becomes essential to know their distribution according to variables such as sex, age and injury type to guide the creation of interventional measures to begin to settle the TA and their victims.

Objective: To assess the deaths from traffic accidents occurred in the city of Maceio in the period of 2001 to 2010.

Method: It is a descritive study, which used secondary data from the Database of the Mortality Information System (SIM), available on the Department of Health of Maceió (SMS) in July 2011. The variables studied were deaths by type of accident, sex and age. Data were analyzed using EpiInfo version 3.5.3.

Results: In the period of 2001-2010, occurred 53,186 deaths, which 1,369 (2.57%) were due to traffic accidents. The type of fatal accident that occurred most frequently was involving pedestrians (48.88%), followed by accidents classified as "other' transport accidents" (37.61%). Death in men is more often presented with 1122 (81.95%) cases. The deaths were more prevalent among persons of 15 to 49 years, with 924 cases (67.49%), followed by the deaths of those 50 years or more (23.59%).

Conclusion: This study showed that the deaths from traffic accidents (TA) in the city of Maceio, as well as in Brazil and elsewhere in the world are alarming and could be prevented. Thus, there

is the need to create interventional measures, which must include improvements on the structural conditions of the roads, with more rigid enforcement of the laws of the traffic, and also realizing programs of education in the transit in a more frequent and proficient way.

Keywords: traffic accidents, deaths, Brazil.

INTRODUCTION

Over the past 60 years, the urbanization process has intensified around the world, especially in industrialized underdeveloped countries such as Brazil. A space reorganization resulting from population growth of cities has also brought the need for reorganization of the traffic, due to the increasing number of vehicles in the fleet of all the country [1].

It is estimated that each year 1.2 million people die due to traffic accidents (TA) in the world and it is expected that this specific cause of death is the third largest contributor to health problems in the world in 2020[2]. Furthermore the large number of deaths, the TA are also responsible for 50 million wounded or incapacitated people[3].

Annually about 37.000 people die and other 180.000 are hospitalized due to TA in Brazil. This characterizes this type of death as a serious social and public health problem, due the pragmatic impact on interpersonal relationships and investments in the protection and rehabilitation health[4].

Youth as a social category involves specific problems and characteristics. In this sense, it appears that the enhancement of professional and financial stability is in association with the importance of leisure practices, sociability and fun. Thus, young people and adults are exposed to specific events that may lead them to death, being one of the most common causes the transit accident[5]

The vulnerability of this group in relation to the occasions that can involve fatal victims of TA, increases in the same time that abusive and irresponsible habits in combination with driving are adopted, such as overuse of alcohol and other drugs and the inadequate enforcement of traffic laws[5]

In Brazil, traffic fatalities are more frequent among people 20 to 39 years, more than 45% of the total. When studied the health indicator "potential years of life lost" (PYLL), the concentration of deaths in low ages and their number will make an external grievances of its main causes, considering the significant increase provided by the TA[6,7]

However, the frequency of deaths in Brazilian States and Capitals and how they occur, comply with different standards and specific locations. Thus, it becomes essential to know their distribution according to variables such as sex, age and injury type to guide the creation of interventional measures to begin to settle the TA and their victims, fatal or not, that they generate.

Therefore, the paucity of research demonstrates the importance of this regional study whose objective is to obtain data showing the prevalence of traffic accidents in Maceio-AL, a city of considerable social and economic participation in the Northeast region. This will enable the identification of the causes and characteristics of TA in the city, and then, planning and execution of actions that work synergistic settling the numbers of deaths and adverse impacts by TA.

AIM & OBJECTIVES

To assess deaths from traffic accidents occurred in the city of Maceio in the period of 2001 to 2010.

MATERIAL AND METHOD

It is a descritive study, which used secondary data from the Database of the Mortality Information System (SIM), available on the Department of Health of Maceio (SMS) in July 2011. The variables studied were deaths by type of accident, sex and age. Data were analyzed using EpiInfo version 3.5.3. To classify the accidents, we used the criteria of the International Classification of Diseases - tenth version (ICD-10).

RESULTS

In the city of Maceio, in period 2001 to 2010, there were 53,186 deaths. Of these, 1,369 (2.57%) were due to traffic accidents. Among the described ten years, the years 2001 and 2005 showed the highest values, with 154 (11.24%) and 168 (12.27%) deaths, respectively (Figure 1).

The type of fatal accident that occurred most frequently was involving pedestrians (48.88%), followed by accidents classified as "other' transport accidents" (ICD 10) (37.61%). (Table1).

In the study of deaths by sex, death in men is more often presented with 1122 (81.95%) cases. The male deaths follow the general causes: higher number at pedestrians (46.79%), followed by other causes (38.77%) and motorcyclists (8.64%) (Table 2). The years of greatest number male deaths in 2005 were male (11.95%) and 2001 (11.31%) (Figure 2).

The deaths of females accounted for 247 (18.5%) cases. They also have the order of the general causes: 58.30% of pedestrian deaths, 32.39% from other causes and 4.86% for motorcyclists (Table 2). The years of highest frequency of deaths among all women were 2001 (14.98%) and 2009 (11:34%) (Table 2).

The deaths were more prevalent among persons of 15 to 49 years, with 924 cases (67.49%), followed by the deaths of those 50 years or more (23.59%) and 5 to 14 years (6.86%) (Figure 3).

DISCUSSION

The urbanization process triggered the reorganization of socials spaces, requiring important changes in the organization of traffic in a manner consistent with the number and type of vehicles in country[1]. This increase in the fleet wasn't accompanied with changes that improve the traffic, and this caused the number of TA increased significantly, becoming, as well as a serious social problem, also a public health problem[2].

It is predicted that most of this accidents will occur in low and middle income countries of the world, not only due to the rapid growth in the number of motor vehicles, but also to exposure to risk factors and conditions such as speed and alcohol and traffic lanes outdated or insufficient (in the case of bicycle paths)[5].

The TA are included in ICD 10 (International Classification of Diseases - 10th version) as "external causes of morbidity and mortality", and this group is named as the second leading cause of death among 5 to 29 years and the third leading cause of death among people 30 to 44 years.

In Brazil, with the epidemiological and demographic transition in the latter half of the twentieth century, the external causes are among the most responsible for the rates of morbidity and mortality[8]. Among these causes, traffic accidents take a highly significant representation, reaching 50% in some cities6. The current fleet of vehicles in Brazil is estimated at 66,116,077 vehicles. In the years before 2001, this fleet was 30,267,649 vehicles. This shows a growth of over 50% in just 10 years[9].

At the same time of this growth, there was increase in the number of TA in the country. In the analysis by age group, traffic fatalities are more frequent among people 20 to 39 years, more than 45% of the total.

In Alagoas, the fleet calculated until March 2011 is 451,176 vehicles, almost triple the number related to the years before 2001. Of that number, 211,169 are located in the capital, Maceió[9]. During the year 2010, the number of admissions in the National Health System (SUS) in the State of Alagoas due to TA, achieve 1713, including around the 667 hospitalizations that occurred in the city of Maceió[10].

The city of Maceió follows the national pattern, with high morbidity and mortality in these age groups TA, being the range of 15 to 49 years the most affected. It's a great social loss as the economically active population and producer of social resources is severely affected by this type of injury[4].

In this Brazilian capital, the TA trauma involving pedestrians deaths are the most frequent. And the male is more prone to involvement with TA. It appears that the man often presents more risk behaviors than women, with the use of alcoholic beverages, and seems unconcern with theirs acts, including in the traffic[13]. In relation to the increasing involvement of pedestrians in TA, it is possible to denote synergic association of human errors: infractions of drivers and imprudence of the pedestrians themselves, resulting in high rates of fatal accidents involving them.

Nationally, among the vehicles involved in TA, the majority is cars or trucks, but there is an alarming increase in the number of motorcycles. Collisions and rollovers appear, respectively, as the first and second leading cause, followed by pedestrian accidents and collisions with fixed objects. The increasing involvement of motorcycles in TA in Maceio is also evident, because the facilitation of credit for the purchase of such vehicle.

Patient victims of TA, in case that the accident are not fatal, remain, per weeks, months or until years, in programs of rehabilitation and physiotherapy, with wage and employment losses due to these events, showing the dimensions of the economic and social problem[11]. Moreover, there are invisible sequels, which respond mainly by post-traumatic stress disorder (PTSD)[3].

Another feature of the TA is especially important and attractive from the point of view of the preventive health. This cause can be considered, at least theoretically, 100% preventable. Traffic accidents do not occur "by chance", but are due to deficiencies in roads, vehicles, and especially the human failures[8].

In this aspect, the Brazilian government sought to improve traffic safety with the creation of the Brazilian Traffic Code (CTB) on September 23, 1997 and most recently on June 19, 2008, the Federal Law No. 11.705/08, popularly known as "Prohibition", which changed the CTB, and determines zero blood alcohol content for drivers of automotive vehicles[4]. However, it is clear that the lack of enforcement enough to prevent this act of risk, showing neglect of police control, and thus maintaining the possibility of TA deaths this way[13].

CONCLUSION

This study showed that the deaths from traffic accidents (TA) in the city of Maceio, as well as in Brazil and elsewhere in the world are alarming and could be prevented. The incidence of deaths from TA follows a pattern similar to other countries, whose perpetrators and victims of TA are more often males and are included in the economically active population.

Despite the large and rapid increase of the fleet of vehicles and types of vehicles, the infrastructure offered by the state and county did not follow the changes that are needed. So, not only care about accidents with cars, but also those involving pedestrians and motorcyclists, who are highly susceptible to more serious consequences, because they have less protection in the traffic. Moreover, the soon and high growth of the fleet of motorcycles in the city contributed to it were established.

Thus, there is the need to create interventional measures, integrated between the agencies that take care of transportation and its related services, such as DETRAN and DENATRAN. They must include improvements on the structural conditions of the roads, with more rigid enforcement of the laws of the traffic, and also realizing programs of education in the transit in a more frequent and proficient way.

STUDY LIMITATIONS

It is evident that there is lack of precision in classifying traffic accidents, and a largely classified as "Other transport accidents" by ignorance, carelessness or lack of information of those who perform data entry in the Mortality Information System (SIM). Moreover, there is a lack of data about the deaths that occur as a result of traffic accidents, but are not reported at the scene and, thus, do not appear in the SIM at Health Department of Maceio.

REFERENCES

1. Oliveira ZC, Mota EA, Costa MCN. Evolution of traffic accidents in a large urban center, 1991-2000. *Cad. Saúde Pública.* 2008;24(2):364-372.
2. World Health Organization – WHO. Road traffic injury prevention: an assessment of risk exposure and intervention cost-effectiveness in different world regions. Available at: http://www.who.int/choice/publications/d_2009_road_traffic.pdf. Acessed October 15, 2011.
3. Cavalcante FG, Morita PA, Haddad SR. Invisible sequels of traffic accidents: the disorder of post-traumatic stress as a public health problem. *Ciênc. saúde coletiva.* 2009;14(5):1763-1772.
4. Centro de Experimentação e Segurança Viária – CESVI Web site. Available at: <http://www.cesvibrasil.com.br/seguranca/biblioteca_dados.shtm>. Acessed October 15, 2011.
5. Araujo MM, Malloy-Diniz LF, Rocha, FL. Impulsivity and traffic accidents. *Rev. psiquiatr. Clín.* 2009;36(2):60-68.
6. Mello Jorge MHP, Latorre MRDO. Traffic accidents in Brazil: data and trends. *Cad. Saúde Pública.* 1994;10(suppl1):S19-S44.
7. Sousa, FS. What is "being adult"? The practices and social representations - The Sociology of Youth. *VI Congresso Português de Sociologia.* 2008:1-21.
8. Barros AJD, Amaral RL, Oliveira MSB, et al. Traffic accidents with victims: underreporting, characteristics and lethality. *Cad. Saúde Pública.* 2003;19(4):979-986.

9. Ministério das Cidades, Departamento Nacional de Trânsito – DENATRAN Web site. Available at: <http://www.denatran.gov.br/>. Acessed October 15, 2011.
10. Departamento de Informática do SUS - DATASUS. Indicators of SUS Hospital Morbidity due to external causes. Available at: <http://tabnet.datasus.gov.br/cgi/deftohtm.exe?sih/cnv/fial.def>. Acessed October 14, 2011.
11. Calil AM, Sallum EA, Domingues CA, et al. Mapping injuries in traffic accident victims: a literature review. *Rev. Latino-Am. Enfermagem.* 2009;17(1): 120-125.
12. Marin L, Queiroz MS. The current status of traffic accidents in the age of speed: an overview. *Cad. Saúde Pública.* 2000;16(1):7-21.
13. Brandão YT, Correia DS, Alves de Farias MJ, Antunes TM, da Silva LA. The prevalence of alcohol consumption among the students newly enrolled at a public university. *J Pharm Bioall Sci.* 2011;3:345-9.

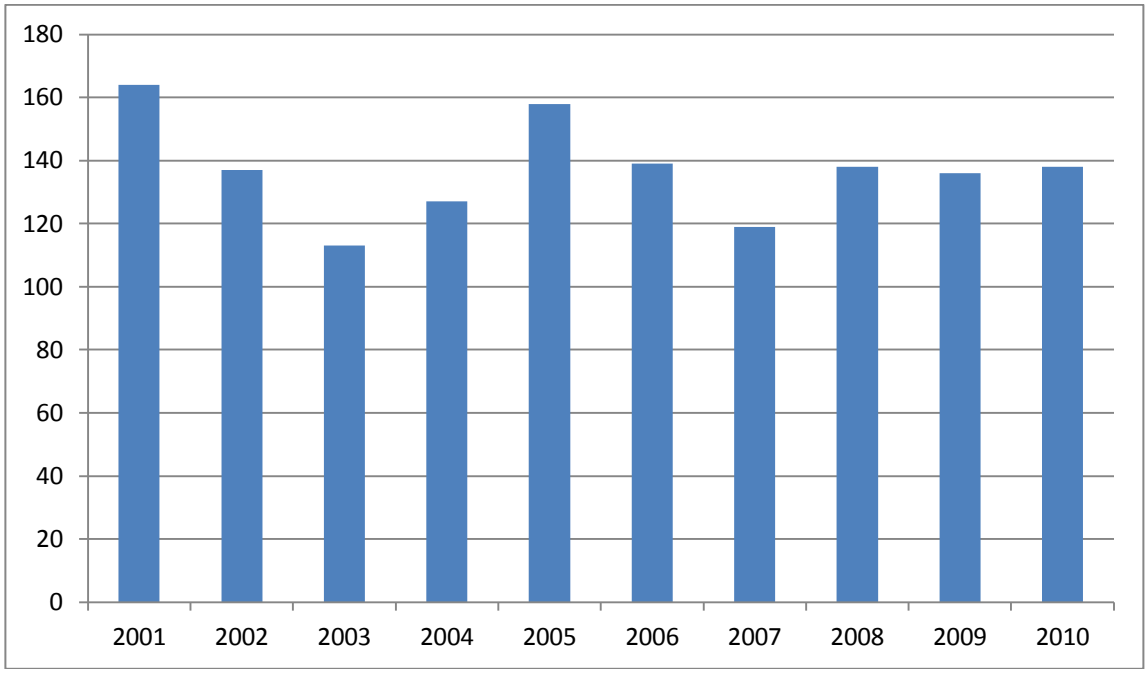

Figure 1: Deaths from traffic accidents, sort by year of occurrence. Maceió-AL, Brazil, 2001-2010**.**

Table 1: Deaths by traffic accident, sort by cause. Maceió-AL, Brazil, 2001-2010.

Type of accident	***n (%)***
Pedestrian	669 (48.88)
Other transport accidents	515 (37.61)
Motorcyclist	109 (7.96)
Occupying a car	30 (2.20)
Cyclist	27 (1.97)
Occupant of a heavy vehicle	14 (1.02)
Occupant of a pickup truck	1 (0.07)
Occupying a bus	1 (0.07)
Water transport accidents	1 (0.07)
Unspecified	2 (0.14)
Total	1369 (100.00)

Table 2: Deaths by traffic accident by cause, according to sex.Maceio-AL, Brazil, 2001-2010.

Type of accident	Deaths			
	Female		Male	
	n	(%)	n	(%)
Pedestrian trauma	144	29.63	525	15.31
Other types of transportation	80	62.96	435	77.47
Motorcyclist trauma	12	3.70	97	6.30
Occupying a car	4	0.00	26	0.00
Cyclist trauma	4	3.70	23	0.92
Occupant of a heavy vehicle	2	0.00	12	0.00
Occupant of a pickup truck	1	0.00	-	0.00
Occupying a bus	-	0.00	1	0.00
Water transport	-	0.00	1	0.00
Total	247	100.00	1122	100.00

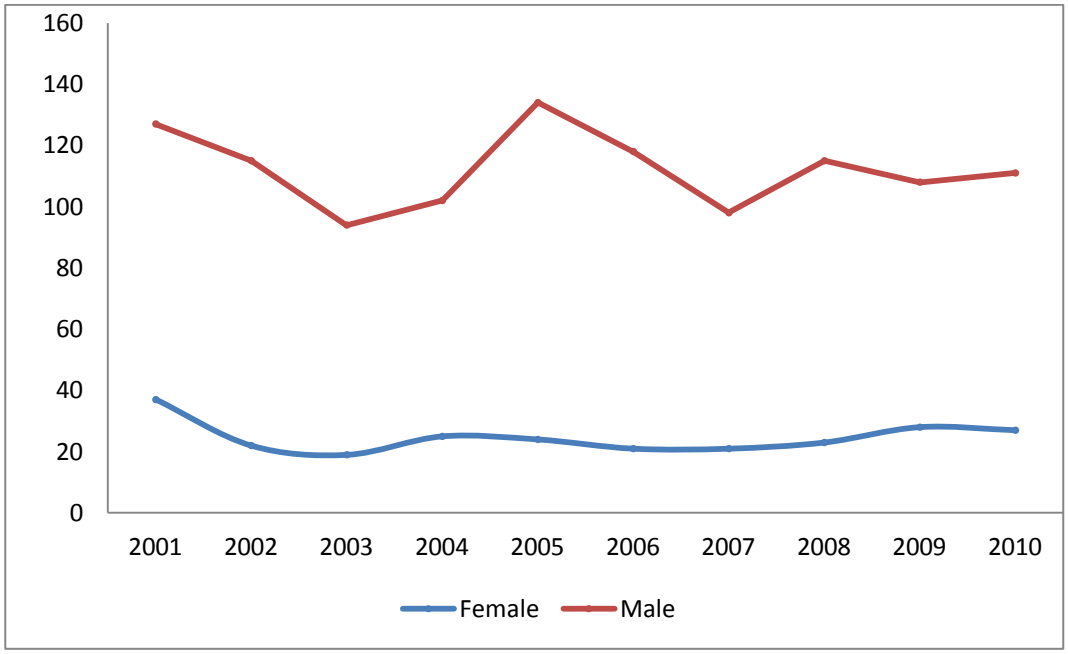

Figure 2: Deaths of males and females by traffic accidents sort by year. Maceio-AL, Brazil, 2001-2010.

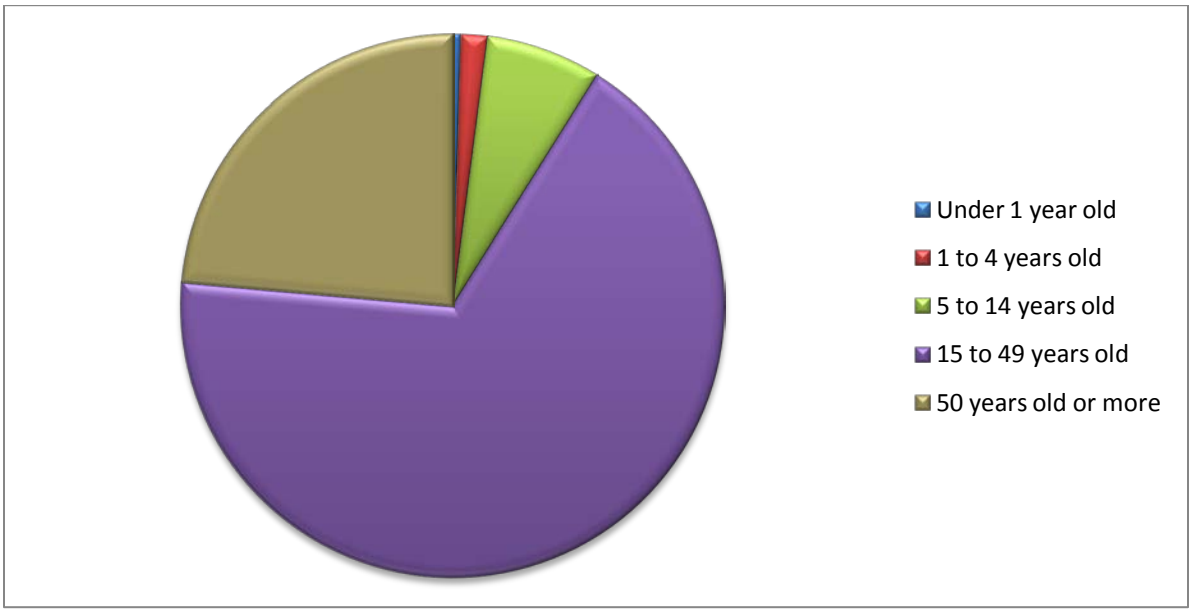

Figure 3: Deaths from traffic accidents according to age. Maceio-AL, Brazil, 2001-2010.