

Comparative analysis of time spent by the fire department on call of elderly victims fall in collective transport.

Análise comparativa do tempo gasto pelo corpo de bombeiros no atendimento de idosos vítimas de queda no transporte coletivo.

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Abstract

Introduction: The public transport is a major form of transportation in the cities and the increasing elderly population became many users this means of transport. **Objective:** The objective of the research was to compare the time spent by the fire department in the care of elderly fall victims in public transportation between two cities. **Method:** Data were collected by analyzing the database record of the overall occurrences of the fire department on the fall of elderly people in public transport in the cities of Curitiba and Maringá between the years 2005-2012. Collected were the region the city where the event occurred; hospitals for referral of victims and the time spent in attending these events by teams of firemen from the cities. **Results:** Increased occurrence of falls in the elderly collective transport four times in Maringá was observed. The frequency of these occurrences happened mainly in the central region in both cities and time attendance differed significantly and in Maringá most visits took place within an hour and Curitiba with over an hour. **Conclusion:** We conclude that further studies should be conducted and management strategies of public transportation employees so they can improve the time spent on mobile medical care.

Key words: time attendance, trauma, mobile pre-hospital service.

Resumo

Introdução: O transporte coletivo é uma forma importante de locomoção nas cidades e com o aumento da população idosa muitos passaram a ser usuários deste meio de transporte. **Objetivo:** O objetivo da pesquisa foi comparar o tempo gasto pelo corpo de bombeiros no atendimento de idosos vítimas de queda no transporte coletivo em duas cidades paranaenses. **Método:** Os dados foram coletados através da análise do banco de dados de registro geral das ocorrências do corpo de bombeiros, sobre a queda de idosos no transporte coletivo nas cidades de Maringá e Curitiba, entre os anos de 2005 a 2012. As variáveis coletadas foram à região da cidade onde o evento ocorreu, os hospitais de encaminhamento das vítimas e o tempo gasto no atendimento destas ocorrências pelas equipes do corpo de bombeiros das cidades. **Resultados:** Foi observado um aumento de ocorrências de quedas dos idosos no transporte coletivo quatro vezes maior na cidade de Maringá. A frequência destas ocorrências aconteceu principalmente na região central em ambas as cidades e o tempo de atendimento diferenciaram de forma significativa sendo que em Maringá a maioria dos atendimentos aconteceu em até uma hora e em Curitiba com mais de uma hora. **Conclusão:** Conclui-se que novos estudos devem ser realizados e estratégias de gestão de transporte público empregados para que possam melhorar o tempo gasto no atendimento médico móvel.

Palavras chave: Tempo de atendimento; trauma; serviço móvel pré hospitalar.

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INTRODUCTION

Traffic in Brazil, is considered one of the most violent in the world, due to the number of vehicles in circulation, lack of management and organization of traffic, deficiency of supervision and the behavior of users of this system, thus resulting in different consequences on life of casualties.^(1,2) Currently, traffic accidents represent the leading cause of unnatural death in our country, the target of major concern for health care.^(3,4,5,6,7)

As the Brazilian cities have experienced rapid and unplanned growth, the quality of life of its citizens and the way its population moves every day was interfered significantly. In this sense the municipalities should promote physical and social access to urban spaces for all citizens, with the work of accessibility and availability.⁽⁸⁾ Among the forms of transportation, public transportation that can be considered as one of the most important vectors the displacement and movement of people, among them the elderly among urban spaces.⁽⁹⁾

With the increase in population above 60 years of age, came to the fore discussions about disabling events present in this age group and their vulnerabilities.^(10,11,12,13) The progression of age is accompanied by predictable changes in all organs and body systems, but although these changes are characteristic of advancing age, are not inevitable and can be prevented.⁽¹¹⁾ Among the diseases and causes of death in the elderly, foreign, that occur due to negligence associated social failure will the state to invest in adaptations related to the special needs of this population, institutional violence; traffic accidents and public transport.⁽¹³⁾

This population on the rise in Brazil have particularities that need to be considered at the time of service against an injury or accident, since the elderly due to the physiological changes of aging have greater difficulty responding physiologically against external trauma. Falls are very common in this age group leaving as consequences, beyond the injury, the risk of fractures, death, fear of falling again, restriction of activities, the declining quality of life and their health.^(5,10)

To the world health organization the accident is all fortuitous event that determines a recognizable injury, so the events of falls in the elderly individuals, can be classified as an external accident several consequences, high incidence and impact.⁽¹³⁾

Thus, all individuals affected by some event that disrupt its vital condition and require early intervention by qualified health professionals, among which are the services of mobile pre-hospital care.⁽¹⁵⁾ This service medical care emergency care can be defined as any assistance provided outside the hospital environment, with the purpose of providing medical assistance or care and adequate transportation of victims to a health service.^(8,16,17) Adequate care and time elapsed between the accident and hospital admission is a relevant factor to re-

duce mortality of victims of personal injury arising from external accidents, and care between the first hour after the injury is considered a critical time for the initiation of treatment factor that modifies the prognosis of the injury.^(6,18,19) In Brazil, this urgent care and emergency pre-hospital mobile can be carried out by teams of SAMU (Serviço de atendimento móvel de urgência) and the fire department through phone calls, but this system in the country is still under implementation and expansion.^(15,19)

Due to the increasing population of individuals aged over 60 years and use of public services as urban transportation by this population, this study aimed to compare the time spent by the fire department in care of the elderly victims fall in public transport between the cities of Maringá and Curitiba.

METHODS

Search characteristic

It is a descriptive and retrospective developed in corporation fire department of the city of Maringá duly approved by the Research Ethics Committee (CEP - UNICESUMAR) through the opinion number 174.046 on 14/12/2012 and authorization by the local search.

Population

Data of secondary nature were analyzed from the general record of Occurrences Bulletins available in the database of the fire department of the city of Maringá, for the care of elderly aged over 60 years, victims of falling in public transport urban towns of Maringá and Curitiba, during the years 2005-2012. Maringá was founded in 10/05/1947, owned by the state of Paraná, with 487.930 km² of extension area, is located at a distance of 436 km from the capital of this, considered the 3rd largest city in the state with a population of 362 329 000 inhabitants, of which 44.628 million inhabitants are individuals over the age of 60 years. Already Curitiba was founded on 03.29.1693, is the capital of Parana state, has an area of 434.967 km² extension, is considered the 8th most populated city in Brazil with a population of 1.76454 billion inhabitants, 200 899 000 inhabitants are individuals over the age of 60 years. The choice of the city of Curitiba, for comparative analysis of this research was due to model urban public transport of the city be ranked as the best management and the best public transportation system in the state of Paraná.

Instruments

All occurrences of falling in the elderly were analyzed in the chosen city public transport, by surveying each instance individually by the computerized system overall record of firemen, the selected variables were the area of town where the event occurred; the city hos-

pitals where victims were sent and the time spent in attending these events by teams of firemen.

Statistical Analysis

The variables were analyzed using the Statistical Analysis Software application - SAS and test of independence between variables (chi-square) were applied, adopting - if a confidence level of 95% ($\alpha = 0.05$) in this study. All results are presented in a table, graph and chart with frequency and incidence.

RESULTS

The results demonstrate that, in Maringá 198 cases of falls among elderly in public transport, while in Curitiba was the record of 414 of these occurrences were recorded. Analyzing the occurrence of falls, in Maringá an increase of 266% in the number of these, as was observed in Curitiba is seen a 56% increase in the number of occurrences, ie, the case record in Maringá was four times higher than Curitiba. In addition, the city of Curitiba has demonstrated a slight reduction in the number of these events between the years 2009 to 2010 compared to 2008 and observed an increase in subsequent years. We can also verify that there was a decrease in Maringá occurrence of falls in elderly public transportation in the years 2009 and 2010, however, this is worrisome, since in the years 2011 and 2012 was an increase detected fall elderly on public transport in both cities (Figure 1). As stated earlier these results are worrying as increase the risk of traumatic consequences in the elderly.

When we analyzed the regions of the cities where falls of elderly people in public transportation occurred, we found that most instances remained in the central region of both cities, and in Maringá was 54% and 39% in Curitiba. Evaluating the necessity of hospital referral of victims in Maringá most referrals was for the Hospitals Santa Casa, Santa Rita and Universitario, and among services, 23 subjects (11.6%) refused hospital referral, however, was the displacement of the vehicle and the provision of care first aid by firefighters (Table 1).

In Curitiba, the elderly assisted during instances of decline in public transport in the city, were sent to the Hospital Evangelico, Cajuru and Trabalhador, and the number of referrals was similar between hospitals. Could also be observe that among the elderly treated, 43 (10.38%) refused the referral hospital (Table 2). The hospital referral of the elderly was similar in both cities, and 88% and 89% respectively in Maringá and Curitiba.

Through figures 2 and 3 we can observe the region where falls in elderly people in urban transportation of Maringá and Curitiba occurred, frequency, location of referral hospitals for the care and local units of fire brigades, highlighting this way the geographical and logistical management involved in the care of these occurrences.

When evaluated on this mapping the regions of the occurrences of falling elderly and the time spent by the fire department in attendance of these events, since the displacement of the base to the referral hospital, we found a significant difference between the city of Maringá and Curitiba characterizing the extent of the city, location of occurrence, and the bases are crucial factors for this difference in response time (Table 3).

Observing Table 3 it can be seen that the time spent by the vehicle ranged from 37.7% to 81.3% for less than an hour and from 62.3% to 18.7% for an hour or more cities Curitiba and Maringá respectively.

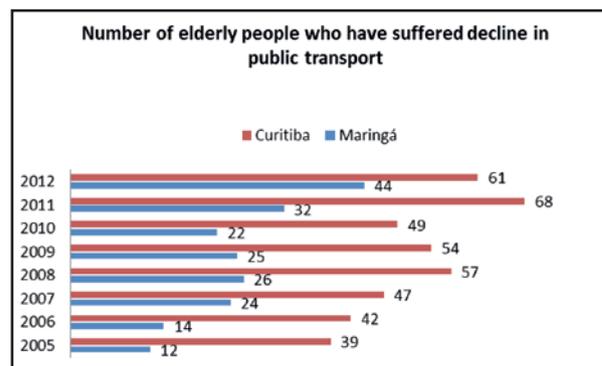


Figure 1. Number of occurrences of falls in elderly in public transport per year from the cities of Maringá and Curitiba.

Table 1. Hospital referral of elderly attended by the Fire Department in transporting victims of fall in the city of Maringá.

Hospital	Nº of cases	Frequency
Santa Casa	90	45.49%
Santa Rita	58	29.25%
Hospital Universitário	24	12.12%
Metropolitano de Sarandi	2	1%
Municipal	1	0.5%
Refuse referral	23	11.60%
TOTAL	198	100%

Table 2. Hospital referral of elderly assisted by Fire Department in transporting victims of fall in the city of Curitiba.

Hospital	Nº of cases	Frequency
Evangélico	122	29.46%
Cajuru	121	29.22%
Trabalhador	121	29.22%
São José dos pinhais	5	1.24%
São Vicente	1	0.24%
UBS Sítio cercado	1	0.24%
Refuse	43	10.38%
TOTAL	414	100%

DISCUSSION

The involvement of individuals belonging to age group is by external trauma causes the health care of the elderly will become a priority as the elderly facing an injury caused by a trauma such as fall, initially feature more critical, because the preexisting diseases and physiological changes. ^(11,13) In addition, the elderly victims of external trauma are usually active, and independent persons after the event they lose this condition everyday independence. ⁽⁵⁾

Data from this study are consistent with the study conducted by analyzing the causes of hospitalization of the elderly by external causes, the authors have observed that traffic accidents and transport are the leading cause of deaths in the elderly and occur due to carelessness of drivers and the limitations of the elderly. ⁽¹³⁾

The urgent care and emergency elderly victims of traumatic events is of utmost importance for the maintenance of life of this individual. Therefore, the referral hospital, is a strategy that is part of the protocol of quality care for a trauma victim, because in these cases, the traumatized patient should be routed through the transport to the hospital that is the main reference for medical care trauma and the prognosis for these individuals. ⁽¹⁶⁾ According to the authors, ⁽⁵⁾ the importance of a hospital setting with adequate conditions to meet the complexity of trauma injuries in the elderly is required.

The service provided by the fire department properly as well as the elapsed time between the fall of the elderly in transport to the admission of this victim, it is important to reduce mortality and the problems of the physical consequences of trauma. Whereas the first hour after injury is the most critical so that appropriate treatment is initiated, since data show that 40% of deaths from external trauma occur in the pre hospital care. ⁽¹⁶⁾

In Brazil the average time between calls of road accidents is 14-31 minutes. In São Paulo is approximately 40 minutes and in Ribeirão Preto the time of service its about 31 minutes, ie, the service time is variable, which does not guarantee that the victim will get to the hospital within 1 hour. ⁽¹⁶⁾ On the other hand, ⁽¹⁸⁾ the time for mobile medical care and emergency services is the result of a combination of several factors, among them the professional experience, conditions local traffic, day

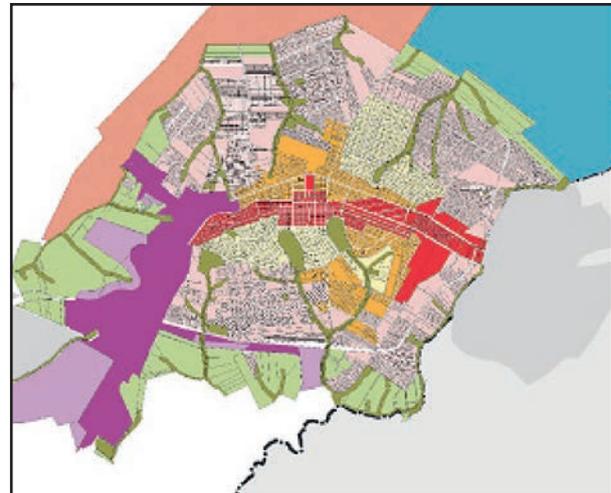


Figure 2. Regions in Maringá where falls of elderly people in public transportation occurred; hospital location and the 5th Fire Department Battalion.

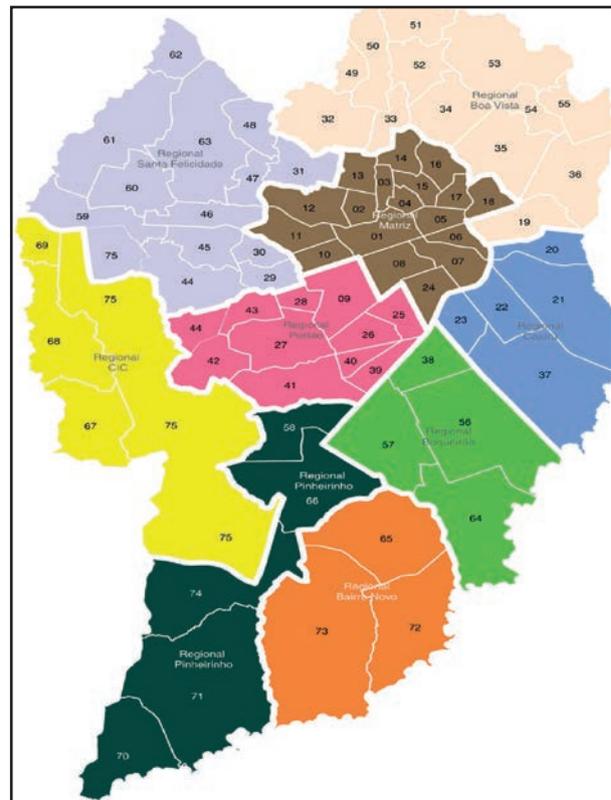


Figure 3. Regions in Curitiba where falls of elderly people in public transportation occurred; hospital location and the 5th Fire Department Battalion.

Table 3. Comparison of service time of the occurrences between the cities.

Accident profile	City				p
	Curitiba (n=414)		Maringá (n=198)		
	n	%	n	%	
Time spent by vehicle					
Less than one year	156	37.7	161	81.3	0.00001*
More than one year	258	62.3	37	18.7	

* Significant chi-square test considering a significance level of 5%

of week, time of day, vehicles available for the occurrence, location of these vehicles and the site of trauma, among others.

CONCLUSION

We conclude that the number the occurrences of falling in public transportation among elderly people increased in the city of Maringá when compared to the city of Curitiba. The highest frequency of these events were in the central region of both cities analyzed, and most instances required hospital referral, demonstrating that

injuries resulting from falls in the elderly are important and troubling.

Regarding the time spent by the service there is a significant difference between the cities, while in Maringá service time is faster, people remaining within the period of one hour. In this way, further studies are suggested by the need to research the communication system of mobile medical care services and geographic management of this system, in order to promote better conditions of work to the professionals involved in this process, quality and efficiency of service time trauma victims.

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