

**CAUSES OF DEATH OF FOREIGN TOURISTS IN THE  
COUNTY OF ISTRIA DURING THE SUMMER HOLIDAY  
SEASON FROM 2000 TO 2004**

LJILIANA LAZIĆ-PUTNIK<sup>1</sup>, OLGA DABOVIĆ RAC<sup>1</sup>,  
DANIJELA LAZARIĆ-ZEC<sup>1</sup>

**ABSTRACT**

In this paper, the causes of death are presented of 322 foreign tourists that occurred during summer holidays in County of Istria, Croatia, in the period from May to September, during 5 years (from 2000 to 2004).

The aim of this study was to evaluate the frequency of the common causes of these deaths.

Data about these cases were taken out of the archives of the Institute of Public Health of County of Istria in Pula.

*Results*

During this period of time there were 322 cases of deaths recorded. The rate was 3.2 deaths for 100 000 tourists. Heart attack occurred in 126 cases (39%), and it was the leading cause of death. The highest number of deaths by the heart attack (n=31) was registered in 2002. The frequency of heart attack was six times higher in males than in females. The heart attack occurrence was between 47% in 2000 to 30% in 2003.

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<sup>1</sup> Department of Epidemiology, Department of Social Medicine, Institute of Public Health of the County of Istria, Croatia. Address for correspondence: Dr Ljiljana Lazić-Putnik, Institute of Public Health, Nazarova 23, HR-52100 Pula, Croatia, Tel ++385(0)52 529 054, Fax ++385(0) 52 529 055,

Drowning was the second leading cause of death with 10.5% of all cases of deaths recorded. Out of all victims (n=34), there were three times more males than females.

Other causes of deaths were chronic ischaemic heart disease (8%), cardiac arrest (4%) and stroke (3.0%).

#### *Conclusion*

Heart attack and drowning were the leading causes of death among foreign tourists in Istria.

*Key words:* mortality, foreign tourists

## INTRODUCTION

Istria is an authentic, traditional and highly rated tourist destination. Beautiful nature and mild climate, historical heritage and contemporary tourist offers, based on the Strategy of Development of Croatian Tourism until 2010, put Istria among leading regions of recreation in Croatia and in the Mediterranean area.

According to the reports of the National Institute for Statistics, the number of guests in Croatia rose from 1999 to 2004 by the average annual rate of 20 %. During the year 2002, that number reached 8,5 million.

In the registered tourist traffic, there were 80% foreigners. According to the data collected from the Tourist Association of Istria, 2 364 561 guests came to that County in 2002, of which 2 203 003 were foreigners ( 93 % of the total number in that year).

The interest of authors in travel medicine has been inspired by Prof.dr.Zvonimir Maretić, one of the founders of Tourist Medicine in Istria region. In his works, he described and published his opinions on various medical and organisational problems connected with travels of tourists (1, 2).

Tourists coming to Istria are offered health care of good quality during their stay or on their way through our region. Some of them suffer from various chronic diseases or they fell ill or have accidents and become injured (3, 4).

Tourists on holidays can be exposed to change of climate and food, to intensive road traffic and stress situations (5). Sometimes, deterioration of their health occurs, particularly if they were suffering from serious chronic health problems, and this may lead to accidents, injuries and death.

## THE AIM OF THE STUDY AND THE METHODS

The aim of our study was to evaluate the frequency and causes of deaths among foreign tourists who spent summer holidays (from May to September) in Istria in 2000-2004. The source of data were records of the Institute of Public Health of the County of Istria in Pula. We have sorted available data according to the International Classification of Diseases and Related Health Problems (6). Parameters, such as the cause of death, the gender and the age of victims were presented in Table 1.

## RESULTS

During the period of observation, between May and September in the years 2000-2004, there were 322 deaths of foreign tourists recorded in the County of Istria, of which 239 victims were males (74.2 %). The frequency of death among the male population was 3 times higher than in females.

The highest annual number of deaths was registered in 2002 (n=77) of which 31 subjects died of the heart attack.

Heart attack was the leading cause of death (39,1%), drowning was second (10,5 %), and next came chronic ischemic heart diseases (8,3 %), traffic accidents (6,2 %), cardiac arrest (4,0%), and stroke (2,8%).

Hundred twenty-six foreign tourists died of heart attack. In 2002 there were 27 males who died of heart attack, of which 14 were in age of 65 to 74 years.

Statistically, male tourists were affected by the heart attack six times more often than female tourists.

Drowning was the second leading cause of deaths with 34 victims (10,5%) reported among foreign tourist. There were 25 males among them.

The chronic ischemic heart disease was the cause of 27 deaths or 8,3% of all cases. There were 14 males among them. The females died at the older age (mainly after 75 years), and males in age of 65 to 74.

20 subjects died in traffic accidents (6,2% of all deaths), more of them were males aged 25 to 34, most of the cases were registered during the summer season 2002.

From 2000 to 2004, thirteen deaths of sudden cardiac arrest (10,5%) were registered, 11 of them were males.

Nine foreign tourists died of stroke which represents 2,8% of all of the registered deaths in the observed period (Table 1).

**Table 1. The number of male (m) and female (f) 229 tourists who died in Istria in 2000-2004 of heart attack, drowning, chronic ischemic heart disease, traffic accidents, cardiac arrest and stroke.**

causes of death	Total no	2000		2001		2002		2003		2004	
		m	f	m	f	m	f	m	f	M	F
heart attack	126	24	3	19	3	27	4	17	3	25	1
Drowning	34	3		4	1	7	2	6	3	5	3
Chronic isch. heart diseases	27		2	2	2	4	3	4	4	4	2
Traffic accidents	20	1	1	1	2	5	2	3	2	2	1
Cardiac arrest	13	5	1	3	1			3			
Stroke	9	2		1		1	1	3		1	
Total	229	35	7	30	9	44	12	36	12	37	7
Other causes of death during 5 years, males and females	93										

## DISCUSSION

There were more deaths registered among male foreign tourists in Istria than females. The highest proportion of males (81,6%) was registered in 2004.

The leading cause of death was heart attack.

During the summer season, every second patient treated in the intensive care department of the hospital in Pula was the foreign tourist with heart attack. The youngest patient died at the age of 31 and the oldest one at the age of 84.

Drowning was the second most often registered cause of death among foreign tourists in our County. During the 2003 and 2004 the trends of drowning were rising by 8%. According to the reports of the WHO, there were 450 000 cases of drowning registered in the world every year. The average rate was 15 victims among every 100 000 subjects. The average age of them was 41,5 years. Most of them drowned by accident.

Throughout the observed period, trends of mortality caused by ischemic chronic heart diseases in the group of cardiovascular diseases were on the increase. This was in relation with arrival of senior groups of foreign tourists. According to data based on analyses made by Institute "Sicher Leben" Austria(7), the mortality in traffic accidents in the EU countries was about 7%. Our data about foreign tourists who died in traffic accidents during the 2002 were close to the European data.

## CONCLUSION

The leading causes of death among the foreign tourists in the observed period were heart attack and drowning.

The possible risks of changes of climate during holidays, and the living and diet habits might contribute to the changed behaviour of guests and influence their mortality.

The closer analysis of above-mentioned external factors will be of great importance for preparing appropriate medical education materials and programs for foreign tourists.

The organisation of effective emergency health services for tourists is important for securing proper care for them during holidays (8).

In Istria, due attention is given to this problem.

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