



## DEATH BY ELECTROCUTION IN THE DISTRICT OF STARA ZAGORA FOR A PERIOD OF 15 YEARS

V. Dokov<sup>1</sup>, R. Miteva<sup>2\*</sup>

<sup>1</sup>Faculty of Medicine, Medical University, Varna

<sup>2</sup>Faculty of Medicine, Trakia University, Stara Zagora

### ABSTRACT

We have examined the cases of death by electrocution in the Stara Zagora district for a period of 15 years. A total of 98 cases of people deceased due to the effects of electric current were investigated. The results were processed with the descriptive statistical methods using the SPSS 12.00 software. It was established that the men : women ratio among electrocution victims was 8:1.

**Key words:** electrotraumatism, electrotrauma, electrocution, death

### INTRODUCTION

Electrotraumatism with lethal outcome has caused a number of social and medical problems. Electrotrauma is defined as injury caused by electric current. It can be the consequence of technical or atmospheric electricity. Cases of death are more often caused by industrial electricity. Injury is caused by direct contact with a live wire, a faulty electric appliance, or objects connected to a source of electric current.

Even though a thorough search was performed, no previous research on the issue in the district of Stara Zagora could be found. This defined the goal of the current study.

### GOAL:

To examine the frequency of mortality in the district of Stara Zagora as a result of electrotraumatism.

### MATERIAL AND METHODS

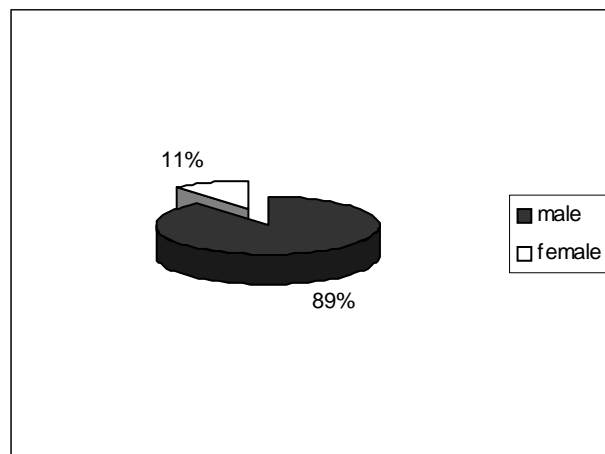
The forensic medical documentation from all autopsies in the period 1995 – 2009 in the district of Stara Zagora was examined. A total of 98 cases of people deceased due to electrocution were found. The results were

processed with the descriptive statistical methods using the SPSS 12.00 software.

### RESULTS AND DISCUSSION.

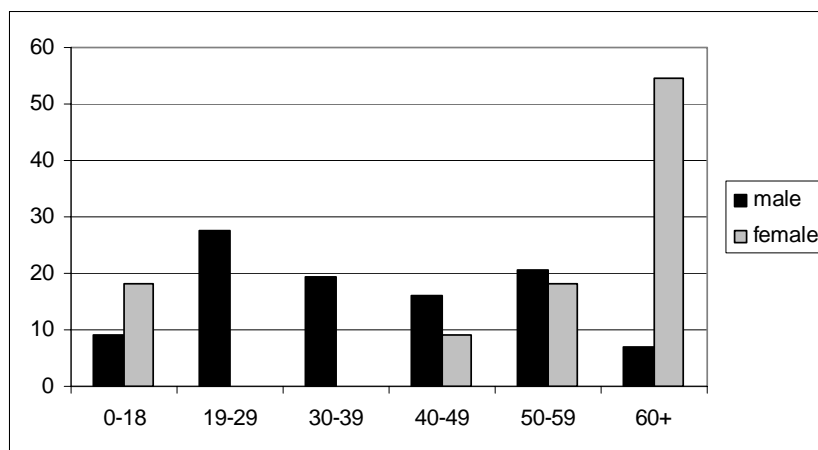
It was established that the distribution of victims by gender was as followed:

Men were involved in 87 cases or 88.8%, while women - in 11 cases (11.2%) (**Figure 1**). The data confirm the results reported from the majority of authors [1, 2, 3]. An exception could be noticed in the results of Kumar P., (2000), [4] according to whom there were more female victims.



**Figure 1.** Distribution of cases by gender.

\*Correspondence to: Bulgaria, Stara Zagora 6000 Trakia University, Faculty of Medicine, Department "General and clinical pathology, forensic medicine and deontology", Dr. Radostina Miteva, e-mail: [drmiteva72@abv.bg](mailto:drmiteva72@abv.bg)

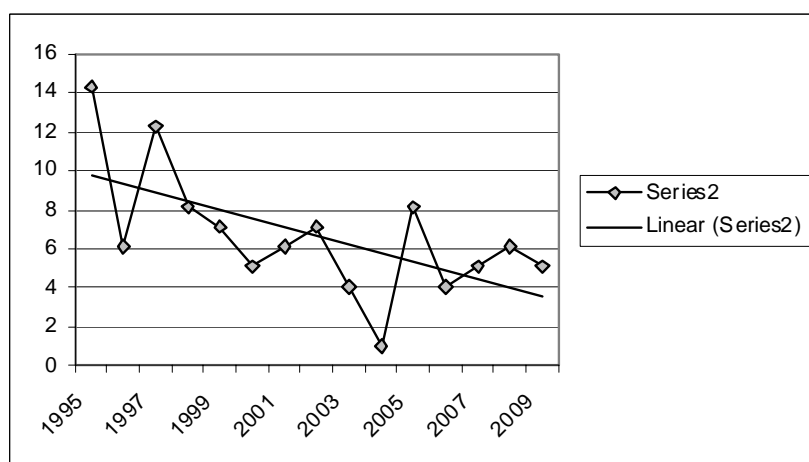


**Figure 2.** Distribution by gender per different age groups.

During the analysis of the gender distribution in the various age groups, it was noted that women became victims of electric current only during childhood age and after the age of 40, while in men the highest number of cases occurred at young age (**Figure 2**).

The mean annual number of cases during the period 1995 – 2009 was observed. This indicator varied from 1 to 14 cases per year.

There was an apparent gradual descending tendency towards decrease in the annual number of cases in average, even though the consumption of electricity at home and in industry has increased (**Figure 3**). These results are different to an extent from those reported by Celik A., et al (2004), [2], who detected only insignificant changes in the number of cases over the last 20 years.



**Figure 3.** Trends in the changes of the number of cases for the period 1995 – 2009.

**Seasonality.** The predominant number of accidents occurred during the summer months – June, July, August – 55.1% of all cases, while there were none in December.

The average age of the deceased was 40 years. Analysis of the results showed that among the victims of technical electricity, incidents at home had the highest share – 59 (65.5%). Occupational incidents take second place – 19

(21.1%). Similar conclusions were reported also by Byard R. W. et al, (2003) [1].

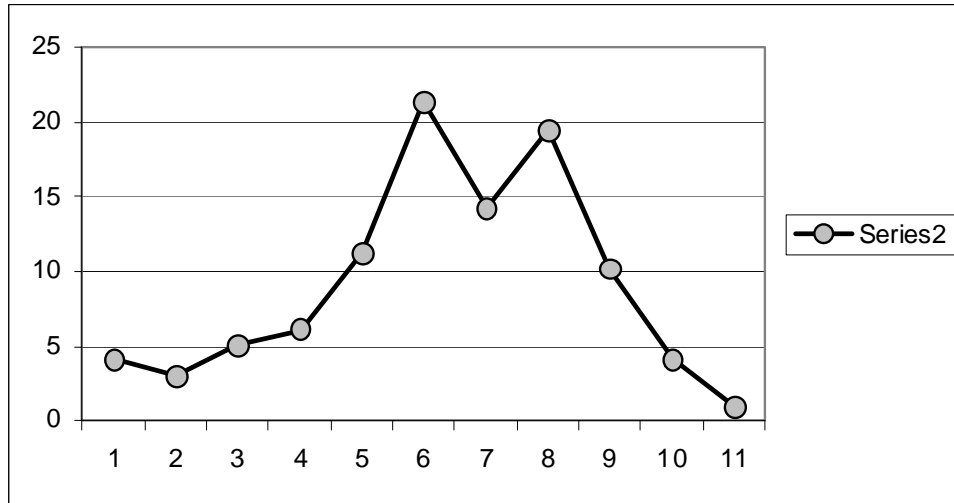
During the observed period, a new phenomenon occurred – theft of cables and live power equipment, which took 9 victims or 10.0 % of all deceased. In our materials, we only found 3 cases of suicide with electric current (3.3%). These cases only included men who used low-voltage current. There were no

cases of homicide within the examined material.

According to electricity characteristics, most common were the cases of death from low voltage – 63 cases (65.6%), from high voltage

– 25 cases (26.0 %). Similar distribution was established by Rimdeika R., Maslauskas K. (2002), [5] .

The effects of atmospheric electricity accounted for 8 deceased (8.4%).



**Figure 4.** Monthly distribution of cases in the period 1995 – 2009.

## CONCLUSIONS

1. Victims of electrotrauma with lethal outcome are mostly males.
2. During the observed period, there is a clear decreasing tendency towards reduction in the average number of incidents per year.
3. Analysis of the results showed that there were mostly incidents at home, whereas occupational deaths and suicides were rarer. There were no homicides done with electricity.
4. The highest number of electrotrauma-related deaths occurred in the months of June, July, and August.
5. A new phenomenon was observed – death by electrocution during theft of cables and live equipment. Its share of the total mortality from technical electricity in the examined materials accounted for 10% of all cases.

## REFERENCES

1. Byard RW, et al Death due to electrocution in childhood and early adolescence. *J Paediatr Child Health*. 2003 Jan-Feb;39 (1):46-8.
2. Celik A, 2004Ergun O, Ozok G. Pediatric electrical injuries: a review of 38 consecutive patients. *J Pediatr Surg*. 2004 Aug;39 (8):1233-7.
3. Nursal TZ, Yildirim S, Tarim A, Caliskan K, Ezer A, Noyan T. Burns in southern Turkey: electrical burns remain a major problem. *J Burn Care Rehabil*. 2003 Sep-Oct;24 (5):309-14.
4. Kumar P, Chirayil PT, Chittoria R. Ten years epidemiological study of paediatric burns in Manipal, India. *Burns*. 2000 May;26 (3):261-4.
5. Rimdeika R, Maslauskas K. Analysis of treatment outcomes after electric injuries (1991-2000) *Medicina (Kaunas)*. 2002;38(8):816-20.