Retrospective study of intoxication-related deaths in Republic of North Macedonia, 2010-2020

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Introduction

Use or abuse of both, licit and illicit drugs present a global public health issue. Combination of two or more substances at the same time can lead to serious life-threatening conditions, sometimes resulting with fatal intoxication.

Objective

Overview of death cases in the Republic of North Macedonia in order to determine the pattern of fatal intoxications.

Materials and methods

• In this study were used toxicological findings of autopsies performed at the Institute of Forensic Medicine, criminology and medical deontology, Medical Faculty – Ss. Cyril and Methodius University in Skopje in the period of 2010-2020.

• Only cases with intoxication as cause of death were included.

• The data was divided in two categories: mono-intoxications and mixed-intoxications (Figure 1). Within the categories there are multiple subcategories (Figure 2 and 3).

• Toxicologically relevant substances as well as age and gender were used as variables.

• Statistical evaluation included descriptive statistic and Mann-Whitney-U test.

Results

• 217 cases were due to intoxication, of which 43 (19.82%) caused by single substance, whilst 174 (80.18%) cases were due to intoxication with more than one substance (mixed-intoxication). (Fig.1)

• The highest number of fatal intoxications, 29 cases, were noticed in 2018. (Fig.4)

• According to age, there was statistically significant difference between the groups (mono- and mixed-intoxication) (z = -3.97029, p = 0.00008), observing that victims of mono-intoxication were older. (Table 1 and 2)

• Intoxication with ethyl alcohol (27.91%) was the most often cause of death in the group of mono-intoxications (Fig.2).

• In the mixed-intoxications the predominant group was DOA and medicine combination confirmed in 57.47% of death cases (Fig.3). Positive result for EA was found in 22% of the cases from the same group. Methadone and benzodiazepines were most often combination in this group (33%).

Conclusion

• In the long-term follow-up of the post-mortem toxicological analyses, it is observed that the number of mixed-intoxications is 4 times higher than intoxications caused by a single substance use.

• Mixed-intoxications are more frequent among youngsters.

• Being the most often used, methadone and benzodiazepines are a dangerous, even lethal combination. Knowing this it is important to draw attention to the control and regulations of prescription medicines and substitution treatment.