



## ACUTE NARCOTIC DRUG INTOXICATIONS: ETIOLOGY, SEX/AGE DISTRIBUTION AND CLINICAL OUTCOME.

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### ABSTRACT

**Purpose:** Poisoning with drugs is a serious medical and social problem worldwide. Retrospective analysis of acute poisoning with narcotic drugs had been performed in Varna region for 25 years (1991-2015).

**Material and Methods:** The number of patients received hospital treatment after poisonings with narcotic substances was 677, which represented 3.9% of all acute exogenous intoxications.

**Results:** Narcotic poisonings were more common in men – 546 (80.6%), than in women – 131 (19.4 %). The ratio male/ female was 4.17:1. The largest number of intoxications were in the age group up to 24 years – 1123 (66%), and only 2.65% of patients were over 45 years. Death was registered in 6 (0.9%) patients.

**Key words:** narcotics, drug poisoning, drug lethality, heroin, amphetamines, opiates, cocaine, ecstasy

### INTRODUCTION

Acute poisonings with narcotic drugs are among the main causes of hospitalization in emergency and intensive care. The frequency varies widely between countries. In Bulgaria, heroin is the leading cause of hospitalization due to intoxication with narcotic drugs. In recent years the proportion of poisoning with marijuana and amphetamines had increased, and the patients' age had decreased.

In this regard, we aimed to investigate the acute poisoning with narcotic drugs in Varna region for 25 years (1991-2015), defining their frequency dynamics during the years of the period, etiological structure, mortality and demographic characteristics – distribution by sex and age.

### MATERIAL AND METHODS

The subjects of the study were 677 patients with acute poisonings with narcotic drugs that had received treatment at the Clinic of Toxicology during the period 1991-2015. The study was retrospective. It had been analyzed the history of illness, personal outpatient' cards,

accepted treatment and medico-legal reports at autopsies of deceased patients. Narcotic drugs had been divided into 7 groups - alcohol, marijuana, amphetamines and methamphetamines, cocaine, ecstasy, central acting acetylcholine-blocking (antimuscarinic) drugs (such as Parkisan<sup>®</sup>), and organic solvents. The diagnosis was based on history, clinical symptoms and was confirmed by proof of narcotic drugs in the urine of patients.

### Statistical Analysis

A descriptive analysis was used for assessment of the results of the study.

### RESULTS AND DISCUSSION

During the period 1991-2015, in the Clinic of Toxicology were hospitalized 677 patients with acute intoxication with narcotic drugs. Their share compared to all poisonings was 3.9%. Acute intoxications with opioids were the most frequent – 381 cases (56.3%), among them heroin was the main etiological factor. Cases of poisonings with heroin were 374, with codeine three, and those with morphine and tramadol were two. The second in the frequency order were the poisonings with marijuana – 135 (19.9%), although it is the most easily accessible narcotic drug. In 2014, 15.6% of 8<sup>th</sup>-grade students and 44.4% of 12<sup>th</sup>-grade students reported ever using cannabis [1]. In 2012, 2.7-4.9% of the world's population aged 15-64 years used cannabis [2]. The first poisoning with amphetamines, methamphetamines and ecstasy were registered in our hospital after 2001. Synthetic amphetamines and ecstasy had become recreational drugs in discotheques because of their euphoric and mood-brightening effects [3]. Amphetamine use was associated with an increased risk of myocardial infarctions [4]. Acute intoxications with central acting acetylcholine-blocking (antimuscarinic) drugs (such as Parkisan<sup>®</sup>) were established till 1999. This drug, because of its accessibility and low cost, was used in combination with alcohol as a psychoactive agent. After 2001, Parkizan<sup>®</sup> had been replaced by amphetamines, methamphetamines and ecstasy.

In our hospital, relatively low incidence of poisoning with ecstasy had been registered, although in 2012 it was considered that 9.4 to 28.2 million people over the world had used ecstasy [5]. The suggested cause of low frequency of cocaine poisoning is its higher price. Single intoxications with organic solvents happened in the first years of the period and were found among adolescents with low social status because of its affordability and low cost. The prevalence of poisonings with different narcotic drugs is shown on Table 1.

**Table 1.** Prevalence of poisonings with different narcotic drugs (1991-2015)

Narcotic drug	Number of patients	Percent, %
Opioids	381	56.3
Marihuana	135	19.9
Amphetamines	60	8.9
Cocaine	33	4.9
Ecstasy	17	2.5
Parkisan®	45	6.6
Organic solvents	6	0.9

In our study, poisoning with narcotic drugs occurred significantly more often in men – 546 (80.6%) than in women – 131 (19.4%). The ratio male/ female was 4.17:1. Intoxications with heroin and amphetamine are typical for males [6, 7]. The analysis of the distribution of the drug intoxications by age revealed that the most affected age group was up to 24 years – 447 cases (66.0%). The age structure of poisonings with narcotic drugs is shown on Table 2.

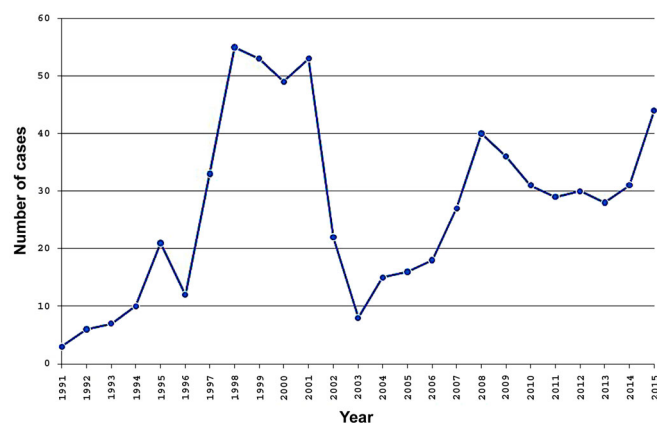
**Table 2.** Age structure of poisonings with narcotic drugs (1991-2015)

Age	Number of patients	Percent, %
up to 24	447	66.0
25-44	212	31.3
45-60	14	2.1
over 60	4	0.6

The majority of poisonings with narcotic drugs (97.3%) were in patients up to 44 years. They were due to accidental or systematic use of narcotic drugs. There were no suicidal intentions in this age group. Registered intoxication in patients over 60 years and in the age group 45 to 60 years were due to oral administration of opioids (such as morphine, tramadol and codeine), ingested with suicidal intention in connection with accompanying malignancies. Acute intoxication with narcotic drugs were priority of young age, often in teenagers (students), and as a rule, were exception in the population over 45 years of age.

Frequency dynamics of narcotics intoxications during the period of the survey is represented on Fig. 1. The most significant increase was noted between 1997 and 2001, when a total of 243 cases were registered (35.9% of overall cases for the whole period). During the last few years (2008 – 2015), however, a tendency for a new peak in frequency appears to take place. Number of heroin intoxications steadily declines, whereas cannabis use rapidly becomes more popular.

**Fig. 1.** Frequency dynamics of narcotics intoxications (Varna region, 1991-2015).



Fatalities had been registered in 6 of patients (0.9%). In all of them, the acute intoxication was due to heroin. In Denmark, 59% of fatalities had relation to drug use due to methadone though fatalities after heroin and morphine fell from 71% in 1997 to 27% in 2012 [8]. Approximately 3-7% of patients with heroin intoxication develop serious infectious complications, pneumonia or cardiogenic pulmonary edema [9]. Lethality increases with the simultaneous use of heroin with alcohol, benzodiazepines or cocaine, as death is often caused by acute respiratory failure or asphyxiation [10, 11]. In USA, it had been reported increase in deaths after heroin poisoning in 28 states from 2010 to 2012. Mortality increased from 1.0 to 2.1 per 100,000 people. The number of deaths had been increased from 1779 to 3635 [12].

## CONCLUSIONS

The poisonings of narcotic drugs share a 3.9% in all acute intoxications. Their share is not high, but some of them cause life-threatening disorders in functions of organs and systems. Opioids and in particular heroin took over the leading as a cause of hospitalization due to poisoning with drugs. The intoxication with drugs is more common in men; the ratio of men to women was 4.17:1. These poisonings are typical for young age and their frequency is increasing among adolescents. Lethality in intoxication with narcotic drugs is 0.9%.

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