Journal of Drug Abuse
ISSN: 2471-853X

Open access Research article

Medical Emergencies Related Illicit Drugs-Ethanol, Cannabis and New Psychoactive Substances (NPS)

Gabriela Grigorasi[1,2*], Diana Cimpoesu[1,2,*], Ovidiu Tudor Popa[1,2], Anca Haisan [1,2], Bashtawi Mariem [1], Irina Ciumanghel [2], Mihaela Corlade[1,2]

[1]Department of Surgery, University of Medicine and Pharmacy "Grigore T. Popa"-Iasi, Romania
[2]Emergency Department, Clinical Emergency County Hospital "St. Spiridon"-Iasi, Romania

ABSTRACT

Drug consumption especially among teenagers is recognized as a major public health problem, with evidence that its use has significant neurological and psychosocial health consequences. The present study aimed to describe the acute recreational drug toxicity resulting in attendances to a large urban Emergency Department (ED) in the North-East region of Romania. A descriptive retrospective study was conducted for a five months period which included all patients admitted to the ED for voluntary/accidental exposure to ethanol, cannabis, cannabinoids and new psychoactive (ethnobotanical) substances (NPS). The studied group included 60 patients, average age 37 years old, with an increased incidence of consumption in the age group 21 years-30 years. The most commonly reported clinical symptoms were: unrest reported by 75% patients, restlessness reported by 47% patients, and cardiovascular abnormalities. Cardiologic disturbances, such as tachycardia and bradycardia, were reported in 52% cases and dyspnea was reported by 50% of patients, cough especially by first time consumers of cannabis and NPS. No significant differences were noted in the analyzed social factors and the risk of suicide attempt: the reason for the intake of a psychoactive substance, a history of suicide attempt, a history of alcoholic issues, a history of illicit drug abuse, a history of drug addiction treatment ($p>0.05$). The management of intoxicated patients has been described in numerous guidelines in order to standardize the emergency response, undergoing improvements over time compared to the results obtained so far. The initial approach is very important because it has an important contribution in decreasing morbidity and mortality, as well as to the long-term survival of patients.

Keywords: Cannabis; Drug abuse; Recreational drugs; Ethanol; Ethnobotanicals

INTRODUCTION

Cannabis is the most commonly used illegal substance in the world. The history of its cultivation and use dates back thousands of years. A possible first documented use for medical purposes of this drug is found in Chinese records dated from 28th century BC [1].

Cannabis consumption, especially among teenagers, is recognized as a major public health problem, with evidence that its use has significant neurological and psychosocial health consequences.

Ethanol and other drugs of abuse such as cocaine, methamphetamine (METH), nicotine, opioids and cannabis continue to be a major globally public health problem. In 2015, the estimated overall prevalence among the adult population was 18.4% for daily alcohol consumption and 3.8% for cannabis [2]. The latest data provided by European Monitoring and Drug Consumption estimates that approximately 83 million people in the European Union, aged between 15-64 years old, have

Received:	03-January-2022	**Manuscript No:**	IPJDA-22-12562
Editor assigned:	05-January-2022	**PreQC No:**	IPJDA-22-12562 (PQ)
Reviewed:	19-January-2022	**QC No:**	IPJDA-22-12562
Revised:	24-January-2022	**Manuscript No:**	IPJDA-22-12562 (R)
Published:	31-January-2022	**DOI:**	10.36648/2471-853X.22.8.76

Corresponding authors Gabriela Grigorasi, Department of Surgery, University of Medicine and Pharmacy "Grigore T. Popa"-Iasi, Romania, E-mail: gabriela.tiulica@yahoo.com

Diana Cimpoesu, Department of Surgery, University of Medicine and Pharmacy "Grigore T. Popa"-Iasi, Romania, E-mail: dcimpoiesu@yahoo.com

Citation Grigorasi G, Cimpoesu D, Popa OT, Haisan A, Mariem B, et al. (2022) Medical Emergencies Related Illicit Drugs-Ethanol, Cannabis and New Psychoactive Substances (NPS). J Drug Abuse. 8:76.

used illegal drugs at least once in their lifetime.

In recent decades, the availability of a range of psychoactive substances collectively known as new psychoactive substances (NPSs) has grown rapidly. Known as legal highs, research chemicals or food supplements these products are sold openly in the high street and online. NPSs are considered to be distinct from illicit drugs because they represent a chemical version of them, designed as legal alternatives [3]. These changes have been accompanied by the emergence of serious adverse cardiovascular events, including myocardial infarction, cardiomyopathy, arrhythmias, stroke, and cardiac arrest [4].

MATERIALS AND METHODS

A descriptive retrospective study was conducted for a five months period (August 1-December 30, 2020), which included all patients admitted to the Emergency Department "St. Spiridon" Iasi for voluntary/accidental exposure to ethanol, cannabis, cannabinoids and new psychoactive (ethnobotanical) substances. We used the data recorded in the clinical observation files. The inclusion criteria were: age over 18 years, anamnestic data, clinical examination and specific symptomatology to exposure to the above mentioned drugs and patients with toxicological and laboratory determinations suggestive for the diagnosis of ethanol, cannabis, cannabinoid and new psychoactive intoxication (ethnobotanical).

Patients with incomplete data recorded in the clinical observation files were excluded from the study. The present study aimed to describe the acute recreational drug toxicity resulting in attendances to a large urban emergency department (ED) in North-East region of Romania.

A urine drug screening test using an immunoassay (Triage Meter Pro) was used to screen for amphetamines, barbiturates, benzodiazepines, cocaine, methadone, methamphetamines (including MDMA), opiates, phencyclidine (PCP), tricyclic antidepressants, and tetrahydrocannabinol (cannabis).

Descriptive Analysis

We investigated three kinds of information: (i) patients (age, gender, and personal and familial medico-surgical history), (ii) input services (medical discharge summaries and letters, and toxicological analyses) and (iii) events (categorized according to the World Health Organization adverse reaction terminology, WHO-ART).

Statistical Analysis

The collected data were statistically analyzed with the support of Microsoft Excel and SPSS. For the collection and storage of data, a database was created and processed using the statistical program. Categorical data was described using frequencies and percentages.

The arithmetic mean (x) and standard deviation (SD) were calculated for the results of the study group at various time points. The level of statistical significance (α) was set at 0.05.

RESULTS

The studied group included 60 patients intoxicated with ethanol, cannabis, cannabinoids or new psychoactive substances (ethnobotanical). Average age was 37 years, the minimum age was 18 years and the maximum was 84 years. The analysis by age showed an increased incidence of consumption in the age group 21-30 years 15 cases (25%). Like the general trend, the majority (77%) was represented by the male gender, the ratio between the two sexes being 3.28/1.

Referring to the environment of origin of the patients, we found that in the studied group, there is an approximately equal distribution, the slightly higher percentage belonging to the urban environment (52%). These data are partly explained by the increased access of patients from urban areas to medical services, but also by the easy access to other drugs, data that are correlated with other studies conducted in Romania. The admission of patients in the ED was done by ambulance, by police, by their own means or by their relatives.

Out of the total of 60 patients, 25 patients were transported by ambulance to the ED (42%), and 27 patients came by their own means (45%). A smaller percentage (7%) was brought by the police or their relatives (6%). Referring to the location from which patients arrived to the Emergency Department, the majority (67.9%) was brought from home and 28.5% of patients arrived from a public place. Most patients were admitted to the ED at night and/or on weekends, and the most commonly self-reported recreational drugs were alcohol and NPS.

33.33% of cases were due to the combined use of two types of drugs, the most used combination being alcohol in combination with various illicit drugs from the group under study (cannabis, cannabinoids, NPS). In 4 cases, the association between ethanol and opioids or ecstasy was declared; these patients were chronic drug users.

It is worth noting that as many as 40 (66.66%) of the patients reported that they had taken an drugs more than twice during their lifetime, 17 (28.33%) declared taking cannabis for the first time during their lifetime, while no information on that issue could be obtained from three (5%) patients.

The short-term effects of cannabis, cannabinoids and ethnobotanicals, whether by ingestion, inhalation through smoking, high concentration cannabinoid vapors or intravenous administration, depend in particular on the age of the consumer, the amount of drug used and if are associate comorbidities. Using a cannabis dose for the first time highlights the true personality traits and pre-existing vulnerability; these two being the main factors correlated with acute psychiatric disorders arising from marijuana use.

The clinical manifestations of drug use depend on how they are consumed and whether they are associated with other substances with a depressant effect (e.g. alcohol) or stimulants (e.g. cocaine).

The most commonly reported clinical symptoms were: unrest reported by 75% patients, restlessness reported by 47% patients, and cardiovascular abnormalities (palpitations, shortness of breath) reported by 38.3% patients. In addition, cardiologic disturbances, such as tachycardia and bradycardia, were detected in 52% patients, while arrhythmia (supraventricular contractions) in 10 subjects in the performed ECG. Hyperthermia, i.e., a body temperature ≥ 38°C was observed in four patients, while rhabdomyolysis confirmed in the biochemical test by elevated phosphokinase (CPK) was detected in 12 patients.

Respiratory disorders related to cannabis consumption were dyspneae reported by 50% of patients, cought especially by first time consumers of cannabis and NPSs. The analysis of the

incidence of adverse symptoms during poisoning by illicit drugs is presented in (Table 1).

Table 1: The frequency of clinical symptoms in the group of patients due to novel recreational drug poisoning.

Clinical Symptom	Participants (N=60), n (%)
Consciousness disturbances	
Conscious Person	58 (96.66%)
Unconscious Person	2 (3.33%)
Unrest	45 (75%)
Agitation	28 (46.66%)
Cardiovascular abnormalities	
Tachycardia	27 (45%)
Bradycardia	4 (6.66%)
Palpitation	23 (38.3%)
ECG abnormalities	10 (16.67%)
Respiratory symptoms	30 (50%)
Psychomotor agitation	4 (6.66%)
Psychotic disorder	48 (80%)

Cannabis intoxication is dose related, and its absorbance depends on the route of administration and concentration being used. Inhaled doses of 2–3 mg and ingested doses of 5–20 mg of tetrahydrocannabinol (THC) can affect memory and cause short-term memory impairment and loss of attention, The LD50 (the lethal dose at which 50% of the sample population dies) of THC is not determined in humans due to ethical reasons, but in animals it ranges from 40 to 130 mg/kg intravenously. In our study the routes of drug intake were analyzed and the results were as follows: oral intake in 34 (56.6%) patients, inhalation in 9 (15%) patients, and both in 17 (28.33%) patients. Recreational use is done with no calculated doses or medical monitoring, likely to be heavy and sustained, and is done most commonly by harmful methods like smoking. Hence, recreational cannabis users are more prone to cannabis poisoning and toxicity. Substances found in the biological material in the group of patients due to novel recreational drug poisoning (N=60) is represented in 9 (Figure 1).

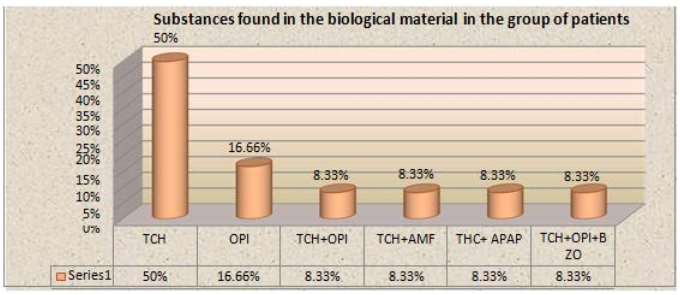

Figure1: Substances found in the biological material in the group of patients due to novel recreational drug poisoning. Abbreviations: THC- tetrahydrocannabinol; OPI- opiates; AMF- amphetamine; APAP-acetaminophen; BZO-benzodiazepines.

Among the group of 60 patients, no significant differences were noted in the analyzed social factors and the risk of suicide attempt: the reason for the intake of a psychoactive substance, a history of suicide attempt, a history of alcoholic issue, a history of illicit drug use, a history of participation in drug addiction treatment, or a heartbreak as the reason for the intake of a psychoactive substance ($p>0.05$).

(ABC) assay was performed, revealing that two (3.33%) patients required intubation due to respiratory failure. These patients were chronic drug consumers and were with a history of suicide attempt. Treatment with fluids was applied in 45 (75%) patients. Psychomotor agitation and extreme aggressive behavior, was found in four (6.66%) patients and they required the application of sedatives (benzodiazepines). In addition, 48 (80%) patients in whom the psychotic disorder persisted in spite of the applied therapy were transferred to psychiatric wards for further treatment; eight (13.33%) patients were treated with β-blockers because of the diagnosed adverse effects and/or ECG abnormalities (tachycardia was the most frequent, while arrhythmia was less common). At their own request, before the completion of the diagnostic/treatment process, 12 (20%) patients were released from the ED and the rest were directed to Psychiatric Department.

DISCUSSION

In 1975, Alexander Shulgin noted that: 'the variety of drugs currently involved in the drug abuse problem is very extensive. As these materials become better defined and their use better controlled, they will be replaced with substitute compounds, which will provide society with new, unknown, and unmanageable substances [5]. Many of the current epidemiological indicators are poorly suited or configured to monitor new substances. This reflects the complexity and highly dynamic nature of the market, including the fact that many users do not actually know what substance they are using. Consumers are no longer limited to pyschonauts and clubbers.

One striking development is outbreaks of mass poisonings caused by 'legal highs' containing synthetic cannabinoids. Products containing MDMB-FUBINACA, were linked to more than 600 poisonings in Russia (2014), including 15 deaths over 2 weeks [6]. During 1 month in 2015, in Mississippi, USA, more than 700 suspected poisonings, including nine deaths with a possible link to ADB-FUBINACA, were reported [7]. While outbreaks have been rare in Europe, during 2015 more than 200 people were hospitalized over a few days in Poland after smoking a product called 'Mocarz'. The cause of these mass poisonings are due to the high potency of synthetic cannabinoids, that producers guess how much substance to use, and poor manufacturing processes leading to uneven distribution of the substance in the product—manufacturing flaws that are a recipe for disaster [8].

The large number of substances that are classified as NPS, misinformation and lack of awareness of the content of substances, their diversity, often unknown, the effects, risk and speed with which they enter and exit drug markets have led to traditional approaches to drug monitoring. NPS market innovation and responsiveness require the rapid identification of new substances that pose a risk to public health and proactive responses to reduce the harm caused by their use [2].

The management of intoxicated patients has been described in numerous guidelines in order to standardize the emergency response, undergoing improvements over time compared to the results obtained so far. The initial approach is very important because it has an important contribution in decreasing morbidity and mortality, as well as to the long term survival of patients.

Cannabis, being a drug used all over the world, we need to be especially concerned about the medical and social consequenc-

es of its use. For a long time, it was seen as a "weak medicine" in relation to the seemingly low medical risk associated with its use. However, the psycho-social consequences of cannabis use, although of major importance, are usually neglected. The danger is exacerbated by the emergence of more potent forms of cannabinoids. Respiratory disorders related to cannabis consumption are similar to those of tobacco and result in cough, expectoration, respiratory tract inflammation and bronchial cell growth modification that can lead to chronic bronchitis or cancer. Concomitant use of cannabis precipitates the occurrence of tobacco induced respiratory complication [9].

Exposure to high concentrations of THC could lead to psychological and neurological events, such as dizziness, drowsiness, ataxia, seizures, hypotonia, stupor, coma, and ocular features such as mydriasis and conjunctival hyperemia, in addition to gastrointestinal disorders, and cardiovascular features such as tachycardia, arterial hypertension, and postural hypotension. However, the use of SCs can lead to more toxic side effects, which may be attributed to the low or no CBD content that has a protective role (anxiolytic and antipsychotic properties), and/or to the high affinity to CB1 receptors compared to THC. The use of SCs is associated with typical acute adverse effect (ex. euphoria, delusions, anxiety, panic attacks, vomiting, seizures, dizziness and others), cardiovascular side effects (tachycardia and hypertension), and long term adverse effects (high abuse, dependence and tolerance).

Bachs and Morland [10] reported six cases of sudden death in males aged 17–43 years old possibly related to cannabis ingestion. Five cases had no previous heart disease, with a record of illicit drug use in just two cases. The sixth case had a previous coronary heart condition and was using heart medications. In all cases, the probable cause of death was an acute cardiovascular event and the presence of cannabis alone was detected in the blood analyses, indicating recent cannabis intake.

The condition of the patients brought to the ED was relatively good, there were few cases in serious condition, with the mention that in the studied group were registered: a case of seizure due to alcohol consumption and only 2 cases of coma, one after ethanol use and autolytic attempt.

CONCLUSION

The new psychogenic substances (ethnobotanicals) consumption appeared in 2008 and has experienced an accelerated growth in recent years, with decreases and returns determined by the implementation of legislative control measures initiated by the government. The new psychogenic substances, which have recently entered into the market compared to cannabis, have become easily accessible because are cheaper and as a result, their consumption has increased substantially lately, especially affecting the young population.

ACKNOWLEGEMENT

None

CONFLICT OF INTEREST

Authors declare no conflict of interest

REFERENCES

1. Artiles AES, Awan A, Karl M, Santini (2019) A Cardiovascular effects of cannabis (Marijuana): A tim update. Phytother Res 33(5):1592- 1594. Epub 2019 Feb 14
2. Peacock A, Leung J, Larney S, Colledge S, Hickman M, et al. (2018) global statistics on alcohol, tobacco and illicit drug use: 2017 status report. Addiction 113(10):1905-1926. Epub 2018 Jun 4.
3. Evans-Brown M, Sedefov R (2016) new psychoactive substances: driving greater complexity into the drug problem. Addiction 2017 112(1):36-38. Epub 2016 Aug 21.
4. Pacher P, Steffens S, Haskó G, Schindler TH, Kunos G (2017) cardiovascular effects of marijuana and synthetic cannabinoids: The Good, The Bad, and The Ugly. Nat Rev Cardiol 15(3):151-166. Epub 2017 Sep 14.
5. Shulgin AT (2008) Drugs of abuse in the future. Clin Toxicol 1975, 8: 405–56.
6. Shevyrin V, Melkozerov V, Nevero A, Eltsov O, Shafran Y, et al. (2015) Identification and analytical characteristics of synthetic cannabinoids with an indazole-3- Carboxamide structure bearing a N-1-Methoxycarbonylalkyl Group. Anal Bioanal Chem 407: 6301–15.
7. Kasper AM, Ridpath AD, Arnold JK, Chatham-Stephens K, Morrison M, et al. (2015) Severe illness associated with reported use of synthetic cannabinoids Mississippi, April 2015. Morb Mortal Wkly Rep 64: 1121–22.
8. Tarján A, Dudás M, Gyarmathy VA, Rusvai E, Tresó B et al. (2015) emerging risks due to new injecting patterns in hungary during austerity times. Subst Use Misuse 50: 848–58.
9. Verbanck P (2018) Short-term and long-term effects of cannabis use. Rev Med Brux 39(4):246- 249 [PubMed] [Google Scholar] [Research Gate].
10. Bachs L, Mørland H (2001) Acute cardiovascular fatalities following cannabis use. Forensic Sci Int 124(2-3):200-3.