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# **Emerging Trends in Novel Psychoactive Compounds**

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#### Abstract

This study delves into the ever-evolving landscape of novel psychoactive compounds, exploring emerging trends in their synthesis, distribution, and consumption. We analyze the dynamic interplay between regulatory efforts and the clandestine innovation of new substances, shedding light on the challenges posed to public health and law enforcement. By examining the latest developments in the field, this research aims to provide valuable insights for policymakers, clinicians, and researchers to address the complex issues associated with novel psychoactive compounds effectively.

Keywords: Novel psychoactive compounds • Emerging trends • Synthetic drugs

# Introduction

New Psychoactive Substances (NPS) encompass a diverse array of natural and synthetic compounds, spanning synthetic opioids, synthetic cannabinoids, synthetic cathinones, and various other NPS categories, which were not regulated under UN drug control agreements from 1961 to 1971. Synthetic opioids, particularly, present a substantial and escalating public health concern. To evaluate fatalities related to fentanyl, its analogues, and other synthetic opioids, we conducted an extensive literature review using publicly available databases, including PubMed, Google Scholar, and Scopus. Our inquiry incorporated specific keywords such as "fentanyl," "fentanyl analogues," "death," "overdose," "intoxication," "synthetic opioids," "Novel Psychoactive Substances," "MT-45," "AH-7921," and "U-47700." The findings from our literature survey revealed a consistent association between fentanyls and synthetic opioids with adverse effects, primarily impacting the central nervous system, cardiovascular system, and pulmonary functions. Our analysis further uncovered a diverse range of chemical compounds and lethal doses involved. Multidrug-related fatalities appeared to be a prevailing pattern in most documented cases. In light of these findings, a multidisciplinary approach is warranted to investigate the role of novel synthetic opioid intoxication in fatalities, with a focus on individual case profiles and targeted toxicological examinations [1,2].

New Psychoactive Chemicals (NPS) constitute a heterogeneous group of unregulated substances available through illicit channels such as smart shops, online platforms, and the "darknet." The use of NPS, often in combination with other illicit drugs and alcohol, has led to a surge in emergency room admissions due to overdoses and a significant number of fatalities. As of July 2017, the United Nations Office on Drugs and Crime (UNODC) had recorded 739 distinct NPS reports. Notably, synthetic opioids have surpassed synthetic cannabinoids (179 substances), cathinones (130), and phenethylamines (94) to become the fourth most frequently detected chemical category in 2017,

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according to the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) report [3].

### Description

Synthetic opioids encompass fentanyl, its medical therapeutic analogues (e.g., sufentanil, alfentanil, remifentanil), and innovative non-pharmaceutical fentanyls not authorized for human medical use. They are employed either independently or in combination with heroin or other opioids with increasing frequency. This paper scrutinizes existing literature on fatalities associated with fentanyl and synthetic opioids, both in isolation and in conjunction with other psychoactive substances such as cocaine, benzodiazepines, alcohol, and additional opioids. It explores the intricate nature of these fatalities, analyzing pertinent data crucial for forensic pathologists [4].

To review fatalities linked to fentanyl, fentanyl analogues, and other synthetic opioids, an extensive literature search was conducted utilizing publicly accessible databases including PubMed, Google Scholar, and Scopus. The search employed keywords such as "fentanyl," "fentanyl analogues," "death," "overdose," "intoxication," "synthetic opioids," "Novel Psychoactive Substances," "MT-45," "AH-7921," and "U-47700." Data were gathered spanning the period from 1990 to June 2018, focusing exclusively on fatal incidents without language restrictions. Various types of research papers were considered, and the reference lists of identified publications as well as PubMed recommendations were also reviewed. A total of 128 articles were included in this comprehensive review, encompassing information regarding the circumstances of death (including trauma and external injuries) and drug exposure, distinguishing between pharmaceutical and illicit drug use.

The world of Novel Psychoactive Substances (NPS) presents a complex and evolving landscape, characterized by a wide array of natural and synthetic compounds that were not subject to UN drug control agreements from 1961 to 1971. Among these substances, synthetic opioids have emerged as a significant public health concern, with fentanyls and their analogues playing a prominent role in adverse effects and fatalities [5].

## Conclusion

Our comprehensive literature review, which spanned the years from 1990 to June 2018, highlighted the prevalence of synthetic opioids in overdoserelated deaths, often in combination with other psychoactive substances. These fatalities have exhibited a range of complex characteristics, impacting various physiological systems, including the central nervous, cardiovascular, and pulmonary systems. Furthermore, the data revealed a diverse spectrum of chemical agents and lethal quantities, with multidrug-related mortality being a common thread in many documented cases. To address the challenges posed by novel synthetic opioids and their role in intoxication-related deaths, a multidisciplinary approach is imperative. This approach involves collaboration among various stakeholders, including forensic pathologists, toxicologists, law enforcement agencies, and public health authorities. By framing each case within its unique context and conducting targeted toxicological examinations, we can better understand the circumstances surrounding these fatalities and contribute to the development of effective preventive measures and harm reduction strategies. As the illicit market for NPS continues to evolve, it is crucial for researchers, policymakers, and healthcare professionals to remain vigilant and adaptable in their efforts to monitor and respond to emerging trends. The insights gained from this study underscore the need for ongoing research, surveillance, and education to mitigate the risks associated with novel psychoactive compounds and safeguard public health.

# Acknowledgement

None.

# **Conflict of Interest**

None.

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