

A three-level drug epidemiology of novel psychoactive substances use and health-related harms from an international perspective

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SUMMARY

Patterns of drug use have evolved during the last decades globally. Most notable is the greater availability of substances such as cocaine and synthetic drugs, as well as an increase in the non-medical use of psychoactive medicines, including benzodiazepines and synthetic opioids such as fentanyl and its derivatives.

In this frame, this doctoral thesis focuses on the use of a large, ever evolving group of natural and synthetic drugs —known as Novel Psychoactive Substances (NPS)— that are generally not controlled by the UN International Conventions on Drugs but may pose a threat to public health due to the health harms (e.g., acute intoxications/poisonings and fatal overdoses) they may involve.

The general objective of this research is to provide relevant knowledge on individual, socioeconomic and structural factors associated with NPS use and related health harms. Its overall aim is to contribute to the reflection and debate on a drug policy that goes beyond mere normative considerations.

To this purpose, a three-level drug epidemiology framework was elaborated. It encompasses individual (positive drug epidemiology), socioeconomic (social drug epidemiology) and structural (legal drug epidemiology) factors contributing to the consumption of NPS and exposure to NPS-related risks and harms. As NPS emulate the psychoactive effects of traditional illicit drugs such as cannabis, cocaine, or amphetamines, and are often used as a substitute or complement to the latter, classic conceptual approaches to illicit drug use seemed relevant to the study of NPS.

While levels of NPS use remain low compared to the use of traditional illicit drugs there are growing concerns regarding their actual effects and safety profiles, mainly among health professionals and the scientific community. The prolonged consumption of some NPS may be associated with drug dependency, withdrawal symptoms and craving, but also with serious adverse effects and life-threatening conditions, especially when they are used in combination with other licit and illicit substances.

Among *individual factors* (positive epidemiology) driving NPS use, the pursuit of emotional wellbeing and pleasurable physical experiences, along with social bonding and the need to cope with difficulties of daily life appeared as the most important motivations. The latter are often concomitant with a high prevalence of mental health issues that may be yielded or worsen by highly prevalent levels of polydrug use observed among NPS users. Of particular interest in this regard is the use of psychoactive medicines (notably benzodiazepine-type NPS and new synthetic opioids) for recreational and/or non-medical purposes. In addition, specific drug use patterns such as sexualised drug use (*chemsex*) – including stimulant and NPS injection – may also involve negative health outcomes due to higher exposure to blood borne diseases such as HIV and HCV.

From the perspective of *socioeconomic factors* (social epidemiology), socially inserted (i.e., economically active, middle and high socioeconomic status) recreational users of NPS —the so-called “party-goers”— seem to be exposed to risks and harms rather linked to

the scarce or misleading information about the actual composition of substances or even to the unawareness of NPS' presence in the drugs they consume. In such cases social networks—in particular "e-psychonauts" virtual communities—appear as both risk and protective factors as they play an important role both in the socialisation of the consumption experience (learning practices to reproduce the pleasurable sensations induced by drugs), and in the dissemination of information on risk and harm reduction (e.g., doses, crisis management). In the case of socially excluded NPS users (i.e., unemployed, low socioeconomic status or incarcerated people) negative influences of socioeconomic inequalities and poverty on health and drug-related outcomes appear as risk factors, especially considering their relatively limited access to harm reduction information and services.

Finally, policy-induced *structural factors* (legal epidemiology) such as control over NPS and lack of effective public health responses seem to have a negative impact on drug users' health and exposure to risk. Regardless of the regulatory model adopted (individual listing, generic control, hybrid control, blanket ban), legal control over substances may partially and temporarily prevent their use, yet it indirectly promotes the emergence of new more potent and toxic substances thus increasing exposure to risk and health harms. When available, targeted harm reduction services (e.g., drug checking, specialised counselling, crisis management advice) may mitigate the negative consequences of NPS use, while general population awareness campaigns do not seem very effective in preventing their use.

The introduction of control measures aimed at reducing NPS supply are likely to produce shifts in drug use patterns that often involve greater probability of severe adverse episodes and fatal overdoses. Therefore, the regulatory challenges posed by NPS represent an opportunity to rethink the traditional approach to drug use that primarily rely on law enforcement to dissuade and punish drug users. Instead of unsuccessfully pursuing the eradication of drug use, regulatory innovation would focus on pragmatic measures that avoid the unintended negative effects of psychoactive substances on users' health.

A wider incorporation of private actors such as drug users themselves and healthcare professionals in the design and implementation of drug policy could thus inform more effective approaches to drug-related risks and harms. Drug policy would also consider the individual and social underlying factors leading to the use of psychoactive substances, including positive (e.g., pursuit of wellbeing and pleasure, self-exploration, physical enhancement, sociability) and negative (e.g., boredom, life dissatisfaction, social compliance) motivations along with specific mental and physical health needs experienced by users, which seem to be determinant contributor factors to NPS use.

Findings from this research show that public health challenges associated with NPS use result from the combination of individual characteristics (e.g., poor mental health), specific high-risk drug use patterns (e.g., poly/injecting drug use, *chemsex*), social risk factors (e.g., unemployment, poverty, social exclusion), and policy-induced structural factors (e.g., drug market resilience, availability of drug treatment and harm reduction services). Specifically, there is a need for appropriate drug treatment and harm reduction services for different at-risk profiles of NPS users, which include "party-goers", *chemsex*

practitioners, incarcerated or socioeconomically vulnerable people, as well as people using medicines for non-medical purposes.

Furthermore, there is a need for relevant scientific knowledge about pharmacological and toxicological profiles of NPS enabling the appropriate clinical management of their adverse effects, including mental health problems, intoxications, and overdoses.

As NPS use remains marginal, national drug monitoring services—including epidemiological, clinical, and forensic services—do not specifically focus on them. Hence, there is a need to move towards monitoring systems that include all relevant partners (i.e., NPS users, public and community-based drug and harm reduction services, A&E healthcare professionals, scientific community, law enforcement agencies, customs, decision-makers) thus increasing the diversity, relevance, and timeliness of available information on drug use.