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PREVALENCE OF NEW PSYCHOACTIVE SUBSTANCES IN A COHORT OF PATIENTS PRESENTING TO AN URBAN EMERGENCY DEPARTMENT (ED) WITH ACUTE RECREATIONAL DRUG TOXICITY

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Objective: There has been exponential growth in the availability of new psychoactive substances (NPS) globally. In 2014, 101 new substances were reported for the first time to the European Monitoring Centre for Drugs and Drug Addiction Early Warning System (EMCDDA EWS) and over 600 NPS have been reported worldwide to date. There is limited data available on the prevalence of acute toxicity associated with NPS use. The aim of this study was to determine how commonly NPS were detected in a cohort of patients presenting to the Emergency Department (ED) with acute recreational drug toxicity.

Methods: We conducted a prospective study enrolling consecutive adults presenting to a London, UK inner-city ED with acute recreational drug toxicity. Surplus serum samples were anonymised and sent for comprehensive drug screening. Samples were prepared by liquid/liquid extraction and screened using UPLC with time-of-flight (TOF) mass spectrometry and measured against a database containing >1400 drugs/metabolites. High-resolution accurate mass-spectrometry tandem-liquid-chromatography (HRAM-LCMSMS) was used to analyse for synthetic cannabinoid receptor agonists (SCRAs). Gas chromatography-mass spectrometry (GC-MS) was used for GHB detection. For the purpose of this study, new psychoactive substances (NPS) are drugs reported to the EMCDDA EWS since 2003; established (classical) recreational drugs were the amphetamines, cocaine, heroin, cannabis, ketamine, LSD and GHB. This study had local UK National REC/IRB approval.

Results: Serum samples were available for analysis from 191 patients, 153 (80.1%) male, median age 32 (range 18–65) years. Of these, 179 samples had sufficient serum for SCRA analysis and 131 for GHB analysis. Established drugs were detected in 151 (79.1%) and NPS in 91 (47.6%, non-mephedrone NPS 33/191, 17.3%). The most commonly detected drug class were the amphetamines (96/191, 50.3%: methamphetamine 57/191 (29.8%), amphetamine 3/191 (1.6%), MDMA 30/191 (15.7%), MDEA 2/191 (1.0%), PMMA 27/191 (14.1%)); cathinones (70/191, 36.6%: mephedrone 66/191 (34.6%), methylone 4/191 (2.1%), ethylone 6/191 (3.1%), dimethylone 1/191(0.5%)

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and butylone 1/191 (0.5%)); followed by cocaine (65/191,34%), opioids (42/191,21.5%), and ketamine (12/191,6.3%). SCRAs were identified in 18/179 (10.0%): 5F-AKB-48 (13/179,7.3%), 5F-PB-22 (7/179,3.9%), MDMB-CHMICA (7/179,3.9%), AB-CHMINACA (3/179,1.7%), Cumyl-5F-PINACA (1/179,0.6%) and BB-22 (1/179,0.6%). Other NPS included ethylphenidate (2/191,1%), methylphenidate (1/191,0.5%), methiopropamine (4/191,2.1%), alpha-pyrrolidinopentiophenone (1/191,0.5%), etizolam (1/191,0.5%) and phenazepam (3/191,1.6%). GHB was detected in 32 (24.4%).

Conclusion: Use of, and acute toxicity associated with NPS may be more common than currently available data suggests – NPS were detected in almost half of this cohort of patients presenting to the ED with symptomatic acute recreational drug toxicity.