K3 Phencyclidine (PCP) Prevalence and Demographics in Driving While Intoxicated/Driving Under the Influence of Drugs (DWI/DUID) and Postmortem Casework in Harris County, Texas, 2013–2018

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Learning Overview: After attending this presentation, attendees will have learned about the prevalence of PCP in DWI/DUID and postmortem casework analyzed in Harris County, TX, from the years 2013 through 2018. Attendees will learn about the demographic profiles and blood concentrations of PCP observed in these cases.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing demographic and toxicological information for PCP use observed in different types of casework in Harris County over a six-year period. This research provides information regarding trends in PCP use in the greater Houston area as compared to driver-related cases previously reported for the city of Houston.[1] The objective of this research was to also recognize any demographic and toxicological differences in DUID and postmortem casework associated with PCP use in Harris County.

In 2018, Harris County remained the third-most populous county in the nation, with a population exceeding 4.6 million people. For DWI/DUID casework, the Harris County Institute of Forensic Sciences (HCIFS) serves various unincorporated areas of Harris County, the Harris County Sheriff's Office, the Harris County Constable, and multiple incorporated municipal police departments, excluding the city of Houston, which is policed by the Houston Police Department and serviced by the Houston Forensic Science Center. For postmortem casework, the HCIFS medical examiner crime laboratory performs testing for all of Harris County, including the city of Houston.

Between the years 2013–2018, HCIFS received 15,922 DWI/DUID cases. Of these cases, 5,156 had blood ethanol concentrations of < 0.17g/100mL (January 2013–June 2017) or <0.10g/100mL (June 2017–December 2018) and were therefore subjected to drug testing. Cases with blood ethanol concentrations above those cutoffs were not analyzed for drugs. There were 3,676 drug-positive cases, and PCP was quantified in blood for 319 cases (2.0% of all DWI/DUID cases; 6.9% drug-tested cases; 8.7% of drug-positive cases). Concentrations ranged from 4.7–187µg/L with mean and median concentrations of 49 and 46µg/L, respectively. Ages of offenders ranged from 20–57 years, with mean and median age of 35 years. Females accounted for 19.12% of the cases, and males were identified in 80.88% of the cases. Races/ethnicities as identified by the submitting officer were: 78.37% Black, 18.50% White, 1.88% Unknown, 0.94% Hispanic, and 0.31% Asian. As with the data for the city of Houston, the average age of the offender was in their 30s, and Black males comprised the majority of PCP-positive impaired drivers.

During this same period, 229 postmortem cases were positive for PCP in blood. Mean (median, range) concentrations were 249µg/L (184, 3.9-5,280µg/L). Ages of decedents ranged from 19–63 years, with mean and median ages of 36 and 35 years, respectively. The demographic cohorts were 17.03% female, 82.97% male, 83.41% Black, 9.17% Hispanic, 5.68% White, and 1.75% Asian. Of these 229 cases, PCP-toxicity was identified in 87 cases as a primary contributor to cause of death, alone or in combination with other drugs or underlying health conditions. Mean (median, range) concentrations were 282µg/L (140, 11–5,280µg/L). These decedents were 24.14% female, 75.86% male, 82.76% Black, 6.90% Hispanic, 8.05% White, and 2.30% Asian. For the remaining 142 cases where PCP toxicity was not identified as a contributor, mean (median, range) concentrations were 230µg/L (192, 3.9–828µg/L). As with DUID casework, decedents were predominantly Black males, with most individuals aged in their 30s.

Demographic data and blood-PCP concentrations are comparable with those previously reported in DWI/DUID casework for the city of Houston (7–180µg/L) and in the literature.[1-3] However, fatal blood concentrations of PCP in the literature are highly variable and have been reported to range from 300-25,000µg/L.[3] The observed concentration ranges were lower in casework at HCIFS, further demonstrating that these fatal ranges have potential to overlap with each other and with what is observed in impaired driving casework. Although concentration ranges can be difficult to define, this research indicates that in Harris County there are demographic trends showing that most users are Black males and the average user will be in their mid-30s. Recognizing these population trends for PCP use can help implement and improve upon programs designed to reduce substance abuse in high-risk areas.

Reference(s):

1. Lee and Stout. Toxicological and demographic profiles of phencyclidine-impaired driving cases in Houston. *J Anal Toxicol* 2020;44:499-503
2. Levine. *Principles of Forensic Toxicology,* 4th ed. AACC Press, 2015; 372-280
3. Baselt. *Disposition of Toxic Drugs and Chemicals in Man*, 11th ed. Biomedical Publications, 2017; 1680-1681

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