

Sex Differences in Poisonings Among Older Adults: an Analysis of the Toxicology Investigators Consortium (ToxIC) Registry: 2010–2016

Gillian Beauchamp^{1,2}, Jennifer Carey³, Tyler Adams¹, Manuel Colón¹, Matthew Cook^{1,2}, Robert Cannon^{1,2}, Kenneth Katz^{1,2}, Amy Wier¹, Marna Rayl Greenberg¹, On behalf of the Toxicology Investigators Consortium (ToxIC)⁴

1Lehigh Valley Health Network Department of Emergency and Hospital Medicine/USF Morsani College of Medicine, Allentown, PA, USA. 2Lehigh Valley Health Network Department of Emergency and Hospital Medicine, Section of Medical Toxicology, Allentown, PA, USA. 3University of Massachusetts Medical School, Department of Emergency Medicine, Division of Medical Toxicology, Worcester, MA, USA. 4American College of Medical Toxicology, Phoenix, AZ, USA.

Background: Older adults are susceptible to both intentional and accidental poisoning with contributing factors including polypharmacy, co-morbidity, susceptibility to medication error and gaps in research. Little is known about sex differences among older adults with poisonings managed at the bedside by medical toxicologists.

Hypothesis: The aim of this study is to review sex differences in poisonings among older adults.

Methods: All cases age > 65 years in the Toxicology Investigators Consortium (ToxIC) registry between 1/2010–12/2016 were reviewed. Abstracted data included reasons for exposure and consultation, exposure agents, and routes, presenting clinical findings, and treatment provided. Cases missing age, sex, or primary reason for toxicologic consult data were excluded. Chi-square tests were used to assess differences in distribution of study variables by participant sex. All analyses were performed with Stata SE v14.2. Study was IRB exempt.

Results: five hundred forty-two of a total of 51,441 cases (1.05%) were excluded due to missing data. Among the remaining 50,899 cases, 2930 (5.8%) cases were included for age > 65 years. 52.3% of the older adults were female. Race was missing or unknown for 49.2% of cases. Females presented more frequently than males for intentional pharmaceutical exposures (36.4 versus 32.0%, $p = 0.01$). No sex differences were observed for intentional non-pharmaceutical or unintentional pharmaceutical and non-pharmaceutical exposures. Most common medications involved in cases were cardiovascular (16.8%) followed by analgesics/opioids (14.8%). Females were more likely than males to require management for cardiovascular medications (18.7 versus 14.7%, $p = 0.004$) and analgesics/opioids (17.6 versus 11.8%, $p < 0.001$). The most common route of exposure was oral ingestion (81.3%). Signs/symptoms were noted in 41.0% of cases, with the most common abnormal vital sign: bradycardia (17.2%). Medical interventions were more common in males (25.1 versus 21.1%, $p = 0.01$)—pharmacologic support was the most common intervention (17.7% males versus 12.3% females, $p < 0.001$). Deaths were reported in 38 female and 46 male patients.

Discussion: Females were more commonly treated by a medical toxicologist for intentional pharmaceutical exposures than males. Despite this finding, males more frequently received pharmacologic support.

Conclusions: Sex differences among older adult poisoning cases were found for intentional pharmaceutical exposures.