

Research Brief

The POSAMINO study: development and validation of explicit criteria for potentially serious alcohol-medication interactions in older adults

Globally, alcohol consumption has been identified as a substantial component of the burden of disease. Furthermore, population demographics are changing worldwide, with the proportion and age of the older population continuing to increase. Compared with younger adults, older adults experience a disproportionate rate of alcohol-related harm, with alcohol-related hospital emergency department visits increasing among this age group. Age-related physiological changes such as decrease in lean body mass, total body water and metabolising enzymes make older adults more vulnerable to its effects, even at relatively low levels. Furthermore, aged adults are more likely to drink more frequently throughout the week compared to younger age groups. A cohort effect has also arisen from the literature, which suggests that relative to previous generations older adults now are consuming more alcohol.

The use of multiple medications also increases with age, indicating that older adults are particularly vulnerable to the harm caused by a combination of alcohol and medication in the body. These interactions can manifest in the form of increased sedation, leading to falls and other accidents, issues with blood sugar and blood pressure, gastrointestinal bleeds and liver damage. The overall aim of this research, led by RCSI School of Pharmacy and Biomolecular Sciences in collaboration with the HRB Centre for Primary Care Research, was to develop an explicit list of potentially serious alcohol-medication interactions for use in older adults and to determine the prevalence and magnitude of risk associated with exposure to these potentially serious interactions.

A systematic review conducted as part of this research published in BMC Geriatrics, reported a high propensity for alcohol-medication interactions among older adults, yet there was a lack of consensus regarding what constitutes an alcohol interactive (AI) medication (1). This led to the development of the POSAMINO (POtentially Serious Alcohol-Medication Interactions in Older adults) criteria using both a literature search and two-round modified Delphi process involving healthcare professionals from both the United Kingdom and Ireland (2). The study published in BMJ Open provided a final list of 38

potentially serious alcohol–medication interactions which included: central nervous system (CNS) (n=15), cardiovascular system (n=9), endocrine system (n=5), musculoskeletal system (n=3), infections (n=3), malignant disease and immunosuppression (n=2), and respiratory system (n=1) agents.

Following the development of the POSAMINO criteria, the next study published in the European Journal of Clinical Pharmacology, investigated the longitudinal prevalence of these potentially serious interactions among community dwelling older adults aged ≥ 65 years using the first three waves of The Irish Longitudinal Study on Aging (TILDA) database (3). Among 1459 participants over a 4-year follow-up, the overall prevalence of POSAMINO was 18% at baseline, with 8% of older adults at risk of one POSAMINO, and 10% at risk of two or more serious interactions. Similarly, the prevalence estimates of POSAMINO were 15% and 17% at wave 2 and wave 3, respectively. Prevalence of any POSAMINO (AOR 0.94, 95% CI 0.81, 1.08) or number of POSAMINO criteria (AIRR 0.97, 95% CI 0.91, 1.04) did not change over time. Any POSAMINO and number of POSAMINO were associated with younger age, male sex and number of medications and chronic conditions.

Falls are the leading cause of injury-related morbidity and mortality among older adults; these potentially serious interactions can increase the risk of sedation which may lead to falls and injuries requiring hospitalisation. The next study published in Age and Ageing, investigated the longitudinal association between falls and these potentially serious interactions at 2 and 4-year follow up using the TILDA database (4). The number of participants who reported falling since their baseline interview at 2 and 4 years were 357 (24%) and 608 (41.8%), respectively; 145 (10%) reported an injurious fall at 2 years and 268 (18%) at 4 years. Exposure to CNS POSAMINO criteria, was associated with a significantly increased risk for falling (adjusted relative risk (RR) 1.50, 95% confidence interval (CI) 1.21–1.88) and for injurious falls (adjusted RR 1.62, 95% CI: 1.03–2.55) at 4 years. These equate to an absolute risk of 19% for falling (95% CI: 5–33%) and 8% for injurious falls (95% CI, 4–20%) at 4 years.

Summary

Overall, this research has highlighted that there is a high propensity for alcohol–medication interactions among older adults, with just under one-in-five older adults at risk. The combined use of alcohol with central nervous system agents increases the risk of both falls and injurious falls. Application of the

POSAMINO criteria at the point of prescribing or dispensing medications may facilitate the risk stratification of older adults and prioritise alcohol screening and brief alcohol interventions in those at greatest risk of harm. This is important, as recent research has highlighted that healthcare professionals are less likely to engage in these conversations with older adults.

The articles can be viewed at:

1. Holton AE, Gallagher P, Fahey T, Cousins G. Concurrent use of alcohol interactive medications and alcohol in older adults: a systematic review of prevalence and associated adverse outcomes. *BMC Geriatrics*. 2017;17(1):148.
2. Holton AE, Gallagher PJ, Ryan C, Fahey T, Cousins G. Consensus validation of the POSAMINO (POtentially Serious Alcohol–Medication INteractions in Older adults) criteria. *BMJ open*. 2017;7(11).
3. Holton A, Boland F, Gallagher P, Fahey T, Kenny RA, Cousins G. Longitudinal prevalence of potentially serious alcohol-medication interactions in community-dwelling older adults: a prospective cohort study. *Eur J Clin Pharmacol*. 2019;75(4):569-75.
4. Holton A, Boland F, Gallagher P, Fahey T, Moriarty F, Kenny RA, et al. Potentially serious alcohol–medication interactions and falls in community-dwelling older adults: a prospective cohort study. *Age and ageing*. 2019;48(6):824-31.