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Medication use among older Australians seeking alcohol and other drug treatment

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Abstract

Objective: To describe the extensiveness of using medications that interact with alcohol or for which alcohol reduces the medication's efficacy in older adults consuming alcohol at hazardous levels.

Method: Retrospective file audit of patients discharged from Australia's only older adult-specific alcohol and other drug treatment service.

Results: 72 patients aged between 58-years and 87-years (*M*=65.88; *SD*=5.67) drinking alcohol at hazardous or harmful levels were taking between 1 and 12 pharmaceutical drugs (*M*=4.03; *SD*=2.42). The majority (92%) of patients were taking at least one medication that placed them at high risk of serious adverse side effects when consumed with alcohol. The efficacy of most patients' (97%) medication was deemed to be significantly reduced when consumed with alcohol.

Conclusions: Among older adults who consume alcohol at hazardous levels, many take prescribed medications that adversely interact with alcohol or have reduced efficacy when consumed alongside alcohol. Targeted education is required for patients and healthcare workers to mitigate these risks.

Key words: Adverse Drug Event, Drug Interactions, Polypharmacy, Alcohol Drinking, Alcohol Use Disorder.

Practice Impact Statement: In a medications audit of patients with hazardous drinking, usage of medications that could adversely interact with alcohol or for which the efficacy could be compromised was common. Given rates of hazardous and harmful drinking among older Australians are increasing, targeted education to healthcare workers is required to reduce the risk of adverse drug events and improve treatment efficacy.

Medication Use among Older Australians seeking Alcohol and Other Drug Treatment

Older adults are at increased risk of adverse drug events and comorbidity due to: (i) increased prescribing and subsequent polypharmacy [1], and (ii) prescribing cascades. A prescribing cascade occurs “when a new medicine is prescribed to 'treat' an adverse reaction to another drug in the mistaken belief that a new medical condition requiring treatment has developed” [2, p.162]. This newly prescribed medication may produce a new, adverse reaction that is perceived as an additional medical condition.

Alcohol can contribute to the prescribing cascade. For example, a protein pump inhibitor such as esomeprazole might be prescribed to treat gastric symptoms. However, the efficacy of protein pump inhibitors is reduced with concurrent alcohol consumption [3]. The excessive gastric acid could lead to a stomach ulcer requiring additional medications, such as analgesics, which often interact with alcohol causing respiratory depression and an increased risk of falls. Similarly, nitrates might be prescribed to treat angina caused by heart disease. Alcohol consumed alongside nitrates can lead to enhanced vasodilation and result in severe hypotension and headaches [4]. These symptoms could lead to a fall and the subsequent use of analgesics.

In most Western countries, rates of hazardous and harmful alcohol consumption have increased significantly among older adults [5], increasing the risk of adverse drug events. Research examining the National Health and Nutrition Examination Survey (NHANES) found that among 3,408 people aged 65 or older who had consumed alcohol in the past 12 months, 77.8% were taking medications that could interact with alcohol [6]. The most common medications were cardiovascular agents (61.3%), metabolic agents (36.5%), central nervous system agents (22.4%) and psychiatric medications (9.6%). Yet many healthcare professionals do not ask older adult patients about their alcohol consumption [7].

Despite older adults who drink alcohol at harmful levels being the most likely population to experience alcohol-related adverse medication interactions, there is limited research about the use of medications in this population. A recent study of 16,838 patients accessing treatment services for a substance use disorder in the Netherlands found that older adults with a late-onset substance use disorder used three and half times more medications than both younger adults and older adults with an early-onset substance use disorder [7]. However, the study did not examine whether the patients' medications had a high risk of interacting with alcohol, nor whether the use of alcohol might reduce the efficacy of the medications. The present study aimed to describe the extensiveness of medication use among older adults drinking at levels that placed them at-risk of experiencing alcohol-related harm. In doing so, we sought to improve on existing methodologies by classifying medications as low or high risk for eliciting an alcohol-related medication interaction and/or impacting on treatment efficacy.

Method

A retrospective medical chart audit of patients discharged over a 12-month period was undertaken at Australia's only older adult-specific alcohol and other drug treatment service by two counsellors and two nurses. An external senior clinician supervised the data collection, cross-checked any outlying cases and made sure that data entries were consistent if queries concerning anomalous information emerged [8]. The study was conducted in accordance with the Declaration of Helsinki, and a waiver of consent was approved by Peninsula Health's Human Research Ethics Committee (LRR/16/PH/14).

The medications that patients reported taking were extracted as variables in the audit and were grouped according to their treatment indication. These categories included psychiatric, cardiac, hypertensive, analgesic, diabetic, statin, gastric and anticonvulsive. We included herbal medications as a separate category.

The Monthly Index of Medical Specialties (MIMS) was used to classify each medication type as having a low or high risk of adversely interacting with alcohol. The MIMS only provides information on alcohol interactions for a limited number of medications [9]. Consequently, a nurse practitioner worked with a pharmacist to review literature to develop a table. Medication types were classified as having a low or high risk of adversely interacting with alcohol, in addition to whether or not alcohol consumption would impact the medications' efficacy (see Table 1).

Finally, the primary drug of concern was determined by the severity of alcohol use, as measured by the Alcohol Use Disorders Identification Test – Consumption (AUDIT-C) [10]. Scores on the AUDIT-C can range between 0 and 12. The AUDIT-C has been shown to have better psychometric properties among older adults than the full AUDIT when a cut off score of 3 is used to identify risky drinking [11].

Results

A total of 79 charts were audited. Five patients were excluded since they had AUDIT-C scores of less than 3. Two patients were excluded as there was missing data for the AUDIT-C. The remaining sample included 41 males aged between 58 and 77-years (M=65.76; SD=4.94) and 31 females aged between 58 and 87-years (M=66.03; SD=6.58).

The primary drug of choice for all but one patient was alcohol. Their AUDIT-C scores ranged between 5 and 12 (M=11.3; SD=1.5). One patient was primarily seeking treatment for cannabis use and had an AUDIT-C score of 5.

The total number of medications taken by patients ranged between 1 and 15 (M=5.18; SD=2.79). Patients reported taking between 1 and 12 pharmaceutical drugs (M=4.03; SD=2.42). The number of prescribed medications was correlated with age r = .30, p = 0.01.

The most common medication types were for the treatment of psychiatric disorders (69%), gastric disorders (47%), hypertension (43%) and cholesterol (33%). Table 1 shows the

frequencies of the medications patients reported taking and the risk ranking for each medication in terms of its potential to adversely interact with alcohol or for alcohol consumption to reduce its efficacy. Forty-six patients reported use of between 1 and 5 herbal supplements (M=1.80; SD=1.08). The types of herbal supplements were not recorded. There was no association between age or gender and the number of herbal supplements taken, and it was not possible to determine the impact of their relationship with alcohol consumption.

Table 2 demonstrates most patients (92%) were taking at least one medication that placed them at high risk of serious adverse side effects when consumed with alcohol. The efficacy of most patients' (97%) medication was deemed to be significantly reduced when consumed with alcohol. Given the low number of patients taking medications classified as low risk, Kruskal Wallis tests were used to examine differences between groups of participants who were taking a medication that had a low risk of adversely interacting with alcohol, a high risk of interacting with alcohol, a low risk of impacting the treatment's efficacy and a high risk of impacting the treatment's efficacy. No differences in AUDIT-C or age were observed.

Discussion

The extent of pharmaceutical medication use among older adults attending alcohol and other drug treatment services in Australia and deemed to be drinking at hazardous levels was high. One patient was taking 12 medications. Through determining the degree that these medications could produce severe adverse effects with concomitant alcohol use, we have found that many psychiatric, cardiovascular, analgesic, bladder and diabetic medications have a high risk of interacting with alcohol. These same medications, with the exception of analgesics and the inclusion of gastric medications, have a high risk of negatively impacting treatment efficacy when used with alcohol.

Over 90% of patients were taking at least one medication deemed to have serious adverse side effects when consumed with alcohol, which was higher than 77.8% of participants identified in the NHANES [6]. This might reflect the finding that older people who are engaging in hazardous alcohol consumption are more likely to experience diverse medical co-morbidities [7], increasing their overall likelihood of taking a medication. Alternatively, given the threshold for inclusion of medications that could interact with alcohol was low in the analysis of the NHANES data, previous estimates of medication usage among older people who drink might be low. Those medications we classified as high risk could led to a range of potential adverse events due to varying and disparate mechanisms of action. It is important that clinicians are aware of the range of potential adverse events to best assess for symptoms.

As our study only included people accessing one alcohol or other drug treatment service, we only obtained a small sample size, limiting the degree of confidence that our findings are representative of older adults drinking at hazardous and harmful levels. Further research using larger samples is required to improve understanding of the extent of medications used by older adults who drink that could adversely interact with alcohol.

We are the first researchers to classify medications according to the impact alcohol has on their therapeutic efficacy among older adults. Almost 95% of our sample were taking at least one medication for which the efficacy of its therapeutic effect would be compromised by consuming alcohol. Further research investigating medication use among people who consume alcohol should consider the impact of alcohol on medication efficacy. There are various mechanism that might reduce the efficacy of medications that we classified as high risk and clinicians should be familiar with these since changes in prescribing practices might improve medication efficacy (e.g., higher dose). Given that many patients were found to be

taking herbal supplements and as these can interact with alcohol [12], future research should also consider the risk of consuming specific herbal supplements alongside alcohol.

Our findings suggest the need for multidisciplinary teams within alcohol and other drug treatment services to identify patients taking medications with a high risk of adversely interacting with alcohol. All patients reported taking at least one medication, which implies adherence to prescribed medications. While this is a positive finding, patients who drink alcohol and adhere to prescribed medications could be at greater risk of adverse medication interactions with alcohol than patients who modify consumption of or abstain from their prescribed medications for the purposes of consuming alcohol and controlling the interaction effects. Multidisciplinary teams could also reduce polypharmacy through medication reviews, aiming to identify evidence of past prescribing cascades. This could reduce the number of medications that patients are prescribed and reduce the likelihood of adverse drug events. For some patients, harm reduction strategies could be implemented where the aim is to reduce potential harms from substance use without necessarily requiring a reduction in their levels of substance use [13]. Patients could be prescribed medications that are less likely to have a serious adverse reaction when alcohol is consumed. For patients with less risky medications available to treat their medical condition, awareness of alcohol-medication interaction harms could be incentivise alcohol consumption reduction.

As many healthcare professionals do not ask older adult patients about alcohol use [7], there is a need for increased education regarding the increasing extensiveness of hazardous and harmful alcohol use among older adults and the potential for alcohol-medication interaction harms. Healthcare professionals should be encouraged to use screening tools that assess medication use, such as the Alcohol Related Problems Survey (ARPS)[9] or its Australian version (A-ARPS). Public heath campaigns for older adults should be developed that highlight common medications that adversely interact with alcohol

or have reduced efficacy when consumed alongside alcohol, whilst recommending that older adults discuss medication and alcohol use with their general practitioner.

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Tables and Figures

Table 1. Risk Classification of Medications.

Medication (N, % cases)	Risk of Adverse Event	Impact on Treatment Efficacy
Psychiatric		
Typical antipsychotic (n=2; 2.8%)	Low	Low
Atypical antipsychotic (n=4; 5.6%)	Low	Low
Tricyclic antidepressant (n=7; 9.7%)	High	High
SSRI (n=29; 40.3%)	High	High
SNRI (n=12; 16.7%)	High	High
Mood Stabilisers (n=5; 6.9%)	High	High
Benzodiazepine (n=14; 19.4%)	High	Low
Anti-Dementia Drug (n=1; 1.4%)	High	High
Cardiovascular		
ACE Inhibitors (n=21; 29.2%)	High	High
Ca Channel Blockers, including Verapamil (n=8; 11.1%)	High	High
Beta Blockers (n=8; 11.1%)	High	High
Angiotensin Receptor Blockers (n=2; 2.8%)	High	High
Aspirin (n=5; 6.9%)	High	Low
Digoxin (n=3; 4.2%)	High	High
Nitrates (n=4; 5.6%)	High	High
Statins (n=26; 36.1%)	Low	High
Diuretics (n=5; 6.9%)	High	High
Analgesics		
Paracetamol (n=9; 12.5%)	High	Low
NSAIDs (n=5; 6.9%)	High	Low
Opioids (n=4; 5.6%)	High	Low
Diabetes		
Insulin (n=3; 4.2%)	High	High
Metformin (n=5; 6.9%)	High	Low
Other (n=2; 2.8%)	High	Low
Other		
Gastric Medication (n=34; 47.2%)	Low	High
Anticonvulsant (n=1; 1.4%)	Low	Low
Bladder (n=5; 6.9%)	High	High

Table 2. Risk of Alcohol Interacting with Participants' Medication or Reducing its Efficacy.

		Adverse Interaction			H	*Df*	*p*
		Low	High	Total			
Treatment Efficacy	Low	2 (2.8%)	0 (0%)	2 (2.8%)	22.63	1	<.001
	High	4 (5.6%)	66 (91.7%)	70 (97.2%)			
	Total	6 (8.3%)	66 (91.7%)	72 (100%)			