**Characteristics and treatment needs of Australian adults drinking above national alcohol guidelines**

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**Introduction:** This study describes the clinical and treatment characteristics of a large community sample of Australians drinking above guideline levels, with the aim of characterising heterogeneity in alcohol-related harm, psychiatric comorbidity, and treatment engagement to inform more personalised approaches to care.

**Methods:** A cross-sectional design was applied to examine a nation-wide with a web-based survey. Setting: This survey was conducted between August 2024 and April 2025 among Australians. Australian adults (aged 18-70) were included if scoring ≥5 on the AUDIT-C indicating hazardous or risky drinking. Eligible participants completed a comprehensive battery of questionnaires assessing sociodemographic, alcohol-use, and psychopathology characteristics. Descriptive statistics were computed for the full sample and machine learning–derived clusters to examine heterogeneity in clinical presentation and how effectively current treatment pathways capture and engage differing clinical profiles.

**Results:** Of 2,138 respondents, 1,022 eligible participants were included in analyses (mean age 47.3 ± 14.6 years; 49.4% (505/1022) female). Severe alcohol dependence (AUDIT-10 ≥20) was present in 56% (572/1022) of the sample, 79% (807/1022) expressed a desire to reduce drinking with treatment support, but only 19.5% (199/1022) had received treatment. Unsupervised machine learning identified four clinically interpretable clusters comprised of: (1) Younger predominantly male high-risk alcohol use with low healthcare and treatment engagement; (2) Older individuals with high-consumption, low-consequence alcohol use and limited diagnosis and treatment; (3) High treatment motivation and recognition group but under-serviced; (4) Severe alcohol dependence and psychopathology and persistent impairment despite treatment.

**Discussions and Conclusions:** Australian individuals with hazardous alcohol use exhibit substantial heterogeneity in severity, comorbidity, and treatment engagement.

**Implications:** The identified clusters are discussed in relation to potential clinical pathways and targeted engagement strategies, supporting more stratified and personalised approaches to AUD care.

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