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ASSOCIATION BETWEEN HEAVY EPISODIC DRINKING AND MEDICATION USE AMONG LATVIAN POPULATION

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Association between heavy episodic drinking and medication use among Latvian population

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Abstract

Introduction. Heavy episodic drinking (HED) is recognised as a significant and increasing global public health issue. According to WHO estimates, one-fifth of the European population has experienced at least one episode of HED in the past 30 days. Previous studies have demonstrated an association between HED and increased odds of using analgesics, sedatives, and antidepressants.

This study aimed to investigate the association between HED and medication use among Latvian residents aged 15 to 74 years.

Methodology. This cross-sectional study used the 2022 survey database from the Latvian Health Behaviour Study, analysing data from 2,835 residents aged 15 to 74 years. HED was defined according to the WHO criteria as consuming 60 grams or more of pure alcohol on a single occasion in the past 30 days. Dependent variables included medication use for headaches, other pain, sedatives, and antidepressants in the past seven days. Univariable and multivariable logistic regression models were employed to examine the association between HED and medication use, including interaction with gender.

Results. 35.1% of men and 9.5% of women engaged in HED. While overall odds of medication use did not differ significantly between HED groups, gender-stratified analyses revealed that women who engaged in HED were twice as likely to use medication for headaches and sedatives, and 1.5 times more likely to use medication for other pain, regardless of age. No significant differences were observed in antidepressant use among women across HED groups.

Conclusions. The odds of using the studied medications, excluding antidepressants, were higher among women with HED patterns. This association was not observed among men. Further research is necessary to elucidate this complex association, as it remains largely unexplored.

Key words: heavy episodic drinking, binge drinking, analgesics, sedatives, antidepressants.

1. INTRODUCTION

Alcohol consumption constitutes a major public health concern, causing 2.8 million deaths in 2016 and representing a leading cause of premature mortality and disability among individuals aged 15 to 49 years (Griswold et al., 2018). In that year, European region experienced the highest global burden attributable to alcohol, with one in five individuals aged 15 years and older engaged in heavy episodic drinking at least once within the past 30 days (WHO, 2018a). Recent global data indicate that seven of the ten countries with the highest per capita alcohol consumption are in the European Union (WHO, 2023a). For example, in 2021, Latvia recorded the highest absolute alcohol consumption among Organisation for Economic Co-operation and Development countries, with 12.2 litres of pure alcohol per capita among individuals aged 15 years and older (OECD, 2021). Additionally, 32.5% of alcohol users in Latvia reported heavy episodic drinking in the past 30 days (Kļīvīte-Urtāne et al., 2023).

Heavy episodic drinking constitutes a specific drinking pattern (Gmel, Kuntsche and Rehm, 2010) and has been extensively studied due to its' strong association with alcohol-attributable harm at the individual level (Rehm et al., 2020). Heavy episodic drinking measure distinguishes between low-quantity consumption over extended periods and high-quantity consumption within short intervals (Manthey et al., 2019).

The World Health Organisation defines heavy episodic drinking as consuming 60 grams or more of pure alcohol on a single occasion at least once per month (WHO, 2018a). However, substantial heterogeneity in this definition exists across studies, limiting comparability and generalisability of findings (Ceballos and Babor, 2017; Kuntsche, Rehm and Gmel, 2004). Definitions differ based on standard drink units (Kalinowski and Humphreys, 2016), blood alcohol concentration (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2024), quantity consumed (WHO, 2018a), frequency (Presley and Pimentel, 2006), and consumption speed (NIAAA, 2024), thereby complicating alcohol research.

Identifying factors associated with heavy episodic drinking remains a critical research priority. This drinking pattern is linked to various health-risk behaviours, including inappropriate use of over-the-counter and prescription medications (Weathermon and Crabb, 1999).

In Latvia, over-the-counter medication use ranks among the highest in the European Union. In 2019, 50% of individuals aged 15 years and older reported using non-prescribed medications or dietary supplements, while 46% reported using prescribed medications (Eurostat, 2022). Several medication classes, including analgesics, sedatives, and

antidepressants, may interact with alcohol (Adams, 1995; Johnson and Seneviratne, 2014). Alcohol consumption can significantly alter medication effects and interfere with their absorption and elimination. Concurrent use of alcohol and medications may cause poisoning, liver damage, central nervous system depression, and other adverse health outcomes (NIAAA, 2014).

The association between heavy episodic drinking and use of various medication groups has been studied across different populations, focusing on adolescents and young adults (Busto Miramontes et al., 2019) and older adults (Holton, Gallagher and Fahey, 2017). Adolescence and young adulthood are critical periods for initiation of drinking behaviours, while older adults face increased risk of inappropriate medication use linked to polypharmacy (Holton, Gallagher and Fahey, 2017; Rehm et al., 2017).

Research has predominantly addressed medication misuse and non-medical use of prescription drugs, given their significant public health risks (Riggs, 2008). Studies in Europe and other regions indicate that individuals engaging in heavy episodic drinking are more likely to misuse analgesics (Esser et al., 2021; Kim, U. and Kim, N., 2019) and sedatives (Silvestri et al., 2015).

Reducing alcohol consumption is critical to achieving the United Nations Sustainable Development Goals by 2030. Evidence shows that alcohol use adversely affects 13 of the 17 goals (WHO, 2020a). Heavy episodic drinking is also highlighted in Latvian policy documents. The National Development Plan of Latvia for 2021–2027 includes measures to reduce harmful use of addictive substances, including alcohol, within the context of psychological and emotional well-being (Pārresoru koordinācijas centrs, 2020). Additionally, the “Plan for Improving Prevention Measures and Health Care Services in the Field of Reducing the Prevalence of Alcoholic Beverage and Narcotic Substance Use for 2023–2025” aimed to lower the proportion of heavy episodic drinkers among the working-age population (15–64 years) (Ministry of Health [VM], 2022a). The Public Health Guidelines for 2021–2027 similarly target reductions in heavy episodic drinking prevalence and associated risks, emphasising also the need to address inappropriate medication use in Latvia (VM, 2022b).

This study examines the association between heavy episodic drinking and medication use among individuals aged 15 to 74 years in Latvia.

Objectives:

1. To estimate the prevalence of heavy episodic drinking across demographic groups in Latvia.

2. To estimate the prevalence of medication use, including analgesics, sedatives, and antidepressants, across demographic groups and by heavy episodic drinking.
3. To analyse the association between heavy episodic drinking and medication use (analgesics, sedatives, and antidepressants), including examination of interaction with gender.

Hypothesis

Individuals with heavy episodic drinking patterns have higher odds of medication use than those without.

2. LITERATURE REVIEW

2.1. Definition of Heavy Episodic Drinking

Heavy episodic drinking is among the most frequently studied patterns of alcohol use in health research; however, terminology in this field remains inconsistent (WHO, 2018a). The terms binge drinking and heavy episodic drinking are used interchangeably in the scientific literature (Hasselgård-Rowe et al., 2022). Furthermore, no universal definition of heavy episodic drinking exists in research (Rolland and Naassila, 2017).

The “WHO Global Status Report on Alcohol and Health” defines heavy episodic drinking as the consumption of 60 grams or more of pure alcohol on at least one drinking occasion in the past 30 days (WHO, 2018a). In contrast, the United States National Institute on Alcohol Abuse and Alcoholism (NIAAA) employs a gender-specific definition based on a blood alcohol concentration increase of at least 0.08%. This level is typically reached when men consume at least five standard alcoholic drinks and women at least four within a two-hour drinking episode. In the United States, one standard drink contains 14 grams of pure alcohol; however, age and body mass must also be considered when interpreting these thresholds (NIAAA, 2024). Similarly, other countries, including Latvia, apply gender-specific definitions. In Latvia, heavy episodic drinking is defined as the consumption of 60 grams or more of pure alcohol for men and 48 grams or more for women on a single drinking occasion at least once per month (SPKC, 2022).

The absence of a universally accepted definition of heavy episodic drinking is primarily due to variations in the quantity represented by one standard alcoholic drink. This variation affects the reliability and comparability of measurements, as surveys on health-related behaviours typically define heavy episodic drinking according to national standard drink thresholds (Kalinowski and Humphreys, 2016). For instance, one standard drink contains eight grams of pure alcohol in the United Kingdom, 12 grams in Latvia, and 20 grams in Austria (WHO, 2018b). Consequently, the commonly used research cut-off of at least five standard

drinks corresponds to different absolute alcohol amounts. To mitigate these cross-cultural inconsistencies, statistical modelling methods are employed in research (Manthey et al., 2019).

Recent evidence indicates that consumption of any standard alcoholic drink increases the risk of developing at least seven types of cancer (WHO, 2023b). Therefore, the significance of defining distinct drinking patterns may gradually decline. Nevertheless, irrespective of potential revisions to the definition of heavy episodic drinking, classifying alcohol consumption by dose and frequency remains essential in research. Epidemiological studies demonstrate that the impact of alcohol on health outcomes depends on both the quantity consumed and the frequency of use (WHO, 2018a).

Scientific literature employs various international and national measurement instruments to assess heavy episodic drinking patterns, most of which rely on the quantity-frequency principle. The quantity component typically denotes the number of standard alcoholic drinks consumed during a single episode, while the frequency component indicates the number of drinking occasions. Surveys often inquire separately about the types of alcoholic beverages consumed (Rehm, 1998). Data collection in alcohol-related research primarily relies on self-reported information obtained through questionnaires, interviews, or diaries (Nugawela et al., 2016).

Measurement instruments vary in the recall periods they use, referring to the exposure period assessed (Rehm et al., 1999). The international survey “WHO STEPwise approach to surveillance (STEPS)”, which standardises data collection on risk factors for chronic non-communicable diseases, uses a 30-day recall period for heavy episodic drinking (WHO, 2020b). In contrast, to capture a general overview of drinking patterns, some studies use instruments with response options covering multiple recall periods. For instance, the WHO developed “Alcohol Use Disorders Identification Test (AUDIT)” assesses the frequency of consuming at least six alcoholic drinks (WHO, 2000). A shortened version, AUDIT-C, is also used in Latvia, primarily within primary health care settings (SPKC, 2022).

The heterogeneity in definitions of heavy episodic drinking across countries imposes substantial limitations on the comparability of findings across studies. Research on heavy episodic drinking employs multiple measurement instruments with varying recall periods for alcohol consumption.

2.2. Prevalence of Heavy Episodic Drinking Across Demographic Groups

The prevalence of heavy episodic drinking varies significantly worldwide. In 2017, the Western Pacific Region exhibited the highest prevalence at 30%, whereas the Eastern

Mediterranean Region recorded the lowest at 1.3%. Predictions indicate that global prevalence of heavy episodic drinking will increase from 20% in 2017 to 23% by 2030, driven by rising alcohol consumption in low- and middle-income countries (Manthey et al., 2019). While global differences are evident, demographic factors remain critical determinants of alcohol use (Kuntsche, Rehm and Gmel, 2004).

A literature review summarising data from 358 studies demonstrates a consistent association between gender and heavy episodic drinking, irrespective of its definition: men exhibit a significantly higher prevalence than women (Kuntsche, Rehm and Gmel, 2004). Primary studies from the United Kingdom (Cheng and Furnham, 2013), Germany (Lange, Manz and Kuntz, 2017), Serbia (Pakovic et al., 2019), Latvia (Kļīvīte-Urtāne et al., 2023), and Ireland (Healthy Ireland, 2023) report that men engage in heavy episodic drinking two to three times more than women.

Gender differences in the prevalence of heavy episodic drinking vary according to age, socio-cultural factors, national alcohol control policies, and other contextual influences (Wilsnack et al., 2018).

Cross-sectional studies in Spain (Valencia-Martín, Galán and Rodríguez-Artalejo, 2007), Denmark (Bloomfield et al., 2008), and Germany (Lange, Manz and Kuntz, 2017) found that the highest prevalence of heavy episodic drinking occurred in the youngest age group for both genders, declining with age. Conversely, a study from England reported that only women exhibited a steady decrease in prevalence with age, from 40.6% in the 16–24 age group to 2.8% in those aged 75 and older. Although men under 35 showed the highest prevalence, men aged 35–44 and 45–54 had similar rates of 33.7% and 34.7%, respectively (Castillo, Jivraj and Ng Fat, 2017). Additionally, an Organisation for Economic Co-operation and Development report identified the highest prevalence among men aged 45–59 in Bulgaria, Cyprus, and the United Kingdom, and among both genders in Romania (OECD, 2021).

Recent evidence indicates that gender differences in heavy episodic drinking prevalence among younger age groups are narrowing. The European School Survey Project on Alcohol and Other Drugs reports an increase among girls in Europe from 30% in 1995 to 34% in 2019, while prevalence among boys decreased from 41% to 36% over the same period (ESPAD Group, 2020). Similarly, a U.S. cross-sectional study found declining gender differences in heavy episodic drinking patterns among adolescents: prevalence among girls fell from 10.54% in 2002–2004 to 5.76% in 2014–2016, and among boys from 11.65% to 5.65% (Clark Goings et al., 2019). Another U.S. study observed narrowing gender differences in the 21–25 and 26–34

age groups, attributed to increased female financial independence, reduced social inequality, greater gender equality, and evolving gender roles (White et al., 2015).

Recent cross-sectional studies attribute gender differences in heavy episodic drinking prevalence to socio-cultural factors. Countries where alcohol consumption is integrated into daily life, primarily during meals, and where alcohol is widely accessible, are classified as having a “wet culture.” Conversely, countries with primarily episodic alcohol consumption and strict access restrictions are described as having a “dry culture” (Bloomfield et al., 2003). For instance, the United States, characterised by a “dry culture,” reports heavy episodic drinking prevalence of 22.5% among men and 12.6% among women (Bohm et al., 2021). In contrast, Georgia, representing a “wet culture,” exhibits prevalence rates of 52.1% among men and 7% among women (Russell et al., 2019).

Several explanations account for the higher prevalence of heavy episodic drinking among men. Biological differences, including sex hormone levels and their fluctuations over the life course, influence behaviour and attitudes. Men tend to exhibit greater risk-taking and maladaptive behaviours than women (Wilsnack et al., 2000). Additionally, in many cultures, heavy episodic drinking has historically been socially acceptable for men but not for women, reflecting traditional gender roles that assign women primary responsibility for family and household duties (Kuntsche, Rehm and Gmel, 2004).

Age independently influences the prevalence of heavy episodic drinking. The World Health Organisation reports that globally, the highest prevalence occurs among the youngest age groups, peaking at 40.7% in the 20–24 age group (WHO, 2018a). This pattern is supported by cross-sectional studies in Spain (Valencia-Martín, Galán, Rodríguez-Artalejo, 2007), Germany (Lange, Manz and Kuntz, 2017), Serbia (Pakovic et al., 2019), the United States (Bohm et al., 2021), and Ireland (Healthy Ireland, 2023). Conversely, a Ukrainian study found the highest prevalence in the 30–44 age group (25.3%), followed by the 45–59 group (19.3%) (Ministry of Health of Ukraine and WHO, 2020). Despite these variations, all studies indicate the lowest prevalence among the oldest age groups, likely due to increased chronic disease risk and medication use, which prompt reduced alcohol consumption (Han et al., 2019).

The higher prevalence of heavy episodic drinking among younger age groups may be attributed to adolescents perceiving alcohol consumption as a social norm during events and a rite of passage before adulthood (Vetter-O'Hagen, Varlinskaya and Spear, 2009). Adolescents undergo physiological and psychological changes that may encourage experimentation with alcohol and boundary transgression as forms of self-affirmation and peer approval (Scott and Kaner, 2014).

In summary, heavy episodic drinking prevalence in adult population is higher among men than women. Factors including age, socio-cultural influences, and national alcohol control policies affect prevalence across genders. Prevalence of heavy episodic drinking decreases with age. However, comparisons are limited by the lack of a uniform definition of heavy episodic drinking across studies.

2.3. Association Between Heavy Episodic Drinking and Medication Use by Demographic Factors

2.3.1. Association Between Heavy Episodic Drinking and Analgesic Use by Demographic Factors

Analgesics (Hider-Mlynarz, Cavalié and Maison, 2018) and sedatives (Penttala et al., 2023) are among the most commonly used medication groups in Europe. Heavy episodic drinkers are hypothesised to have a higher likelihood of using analgesics. Research indicates that this association may differ according to demographic factors (Hargreave et al., 2010; Shehnaz, Agarwal, and Khan, 2014).

Although evidence indicates that concurrent use of alcohol and analgesics can cause health harms such as gastrointestinal ulcers, internal bleeding, acute liver injury, and impaired consciousness (NIAAA, 2014), relatively few European studies have investigated the association between heavy episodic drinking and analgesic use. Moreover, the frequent focus on specific medication classes complicates cross-study comparisons and restricts the capacity to draw detailed, unambiguous conclusions (Busto Miramontes et al., 2019; Hargreave et al., 2010).

A Danish cross-sectional study of 45,000 respondents aged 18 to 45 years examined regular analgesic use among heavy episodic drinkers by age and gender. Regular analgesic users were defined as individuals who consumed at least seven analgesic tablets per month during the previous year. The findings revealed that women who engaged in heavy episodic drinking during the past month had 20% higher adjusted odds of regular analgesic use compared to women who did not engage in heavy episodic drinking. This association was not observed among men. Age-stratified analysis showed that, for both genders engaging in heavy episodic drinking, adjusted odds of regular medication use increased with age, peaking in the 43–45 age group (Hargreave et al., 2010). The authors attributed gender differences to the possibility that women who engage in heavy episodic drinking report pain complaints more frequently and may have lower socio-economic status than men (Wilsnack et al., 2000).

Gender differences in the association between heavy episodic drinking and analgesic use were also identified in a Danish cohort study focusing on non-steroidal anti-inflammatory drugs

(NSAIDs), commonly used to alleviate pain, fever, and inflammation. Medication use data were sourced from the Danish National Prescription Registry, and the analysis was limited to physician-prescribed medications. The study found that individuals engaging in almost daily heavy episodic drinking exhibited a higher incidence of NSAID use (122 per 1,000 person-years) compared to those reporting no heavy episodic drinking episodes in the previous year (103 per 1,000 person-years). After one year, re-examination revealed that respondents who engaged in heavy episodic drinking more than once per week had 1.13 times higher adjusted odds of NSAID use than non-heavy episodic drinkers. Gender-stratified analysis indicated that men with heavy episodic drinking patterns more than once per week had higher adjusted odds of NSAID use than men without such patterns (aOR=1.14). This association was not observed among women (Bonnesen et al., 2023).

The association between analgesic use and heavy episodic drinking may also vary by gender among younger individuals, as demonstrated by a Spanish cohort study. This study investigated the relationship between heavy episodic drinking and non-medical use of prescription medications within a student population. Non-medical use was defined as consumption of prescription medications within the previous 15 days without physician consultation. Results indicated that women engaging in heavy episodic drinking more than once per month had 1.43 times higher adjusted odds of non-medical use of prescription analgesics, sedatives, and anti-anxiety medications compared to women who did not engage in heavy episodic drinking. This association was not observed among men (Busto Miramontes et al., 2019). The reported gender differences are hypothesised to result from heavy episodic drinking-induced dysregulation of the stress response in women, potentially leading to maladaptive coping mechanisms such as prescription medication use to manage psycho-emotional difficulties, consistent with self-medication theory. The extent of gender differences may vary depending on medication types, population characteristics, and dosage and frequency of both medication and alcohol use (Retson, Sterling and Van Bockstaele, 2016; Shehnaz, Agarwal and Khan, 2014).

Analgesic use has been more extensively studied in the United States concerning concurrent use of multiple psychoactive substances, which may elevate risks of hospitalisation and overdose mortality (Tori, Laroche and Naimi, 2020). U.S. cross-sectional study identified factors associated with prescription analgesic misuse, defining misuse as consumption of prescription analgesics during the previous year in a manner inconsistent with physician instructions, such as exceeding prescribed dosages. The study found that individuals who engaged in heavy episodic drinking during the past month had 2.35 times higher adjusted odds

of misusing prescription analgesics compared to non-heavy episodic drinkers. Although the study did not analyse associations by socio-demographic factors, younger age (18–34 years) was strongly linked to analgesic misuse (aOR=1.48) (Kim, U. and Kim, N., 2019).

Another U.S. cross-sectional study examined the association between heavy episodic drinking and use of other substances, including analgesic misuse. The findings confirmed that heavy episodic drinkers had higher adjusted odds of analgesic misuse compared to non-drinkers (aOR=2.4). Gender-stratified analysis revealed that the prevalence of all substance use categories, including analgesic misuse, was higher among men than women. Age-stratified analysis indicated that, among heavy episodic drinkers, the prevalence of other substance use declined with age, from 53.2% in the 12–17 age group to 12.8% in those aged 50 and above. The elevated prevalence among adolescents aged 12–17 was attributed to the fact that only 5% of respondents in this group engaged in heavy episodic drinking, suggesting that these individuals may be more susceptible to serious health problems and psychoactive substance use. The researchers also noted that medication polypharmacy risk increases with age, underscoring the need for additional cohort studies investigating associations between heavy episodic drinking and various medication groups while accounting for socio-demographic and economic factors to derive more robust conclusions (Esser et al., 2021).

Overall, the association between heavy episodic drinking and analgesic use according to age and gender remains inconclusive; therefore, further in-depth investigation is important.

2.3.2. Association Between Heavy Episodic Drinking and the Use of Sedatives and Antidepressants by Demographic Factors

Concurrent use of alcohol and sedatives may exacerbate the adverse effects of both substances and modify their effects unpredictably (Moore, Whiteman and Ward, 2007). Significant limitations exist in research on sedative and antidepressant use among heavy episodic drinkers. First, the association between heavy episodic drinking and sedative use is infrequently examined in the general population, as research predominantly focuses on older adults (Ilomäki et al., 2011; Penttala et al., 2023). This focus is largely due to the high risk of polypharmacy in this age group. Second, epidemiological studies have yet to investigate the causal relationship between heavy episodic drinking and sedative use (Ilomäki et al., 2011). Third, research interest has increased regarding the association between alcohol use disorders and non-medical use of prescription sedatives, as studies in the United States indicate that non-medical use of prescription drugs has become a significant public health concern (Hernandez and Nelson, 2010). The largest increase in prevalence in the United States has been observed

specifically within the psychotropic medication category (Substance Abuse and Mental Health Services Administration, 2021).

A cohort study of older men in Finland (aged 42–60 years at baseline) investigated heavy episodic drinking in relation to sedative and anxiolytic use. After adjusting for age, smoking, employment status, and depressive symptoms, men exhibiting heavy episodic drinking patterns had nearly three times higher odds of initiating sedative and anxiolytic use at the second survey wave, conducted four years later. However, this association was not statistically significant at the third survey wave, conducted 11 years after baseline (Ilomäki et al., 2011).

Observations indicate that sedative use among alcohol consumers may vary by gender, as demonstrated by a cross-sectional study in Finland. Overall, 7.8% of the study population used alcohol and sedatives concurrently. The prevalence of sedative use increased with the consumption of a certain number of standard alcoholic drinks. The highest prevalence (19.4%) was observed among individuals who consumed at least 21 alcoholic drinks in the past seven days (one drink equals 12 g of pure alcohol). Gender-stratified analysis revealed that among those consuming at least 21 drinks, sedative use prevalence was higher in women (39.1%) than in men (14.0%) (Penttala et al., 2023). These findings may be explained by the generally higher prevalence of sedative use among women, which correlates with increased rates of anxiety (Martin, 2003) and depressive disorders (Albert, 2015). Consequently, the study authors suggested that the association between alcohol and sedative use may be influenced by a third variable (Penttala et al., 2023).

In contrast, a cross-sectional study in the United States found no statistically significant gender differences when examining factors associated with non-medical use of prescription medications among students. The prescription medication variable encompassed tranquiliser, stimulant, and analgesic use. The study identified a statistically significant weak correlation between heavy episodic drinking and non-medical use of prescription stimulants ($r = 0.20$), and a statistically significant moderate correlation with non-medical use of prescription tranquilisers ($r = 0.31$). Individuals exhibiting heavy episodic drinking patterns had 3.61 times higher odds of non-medical prescription medication use compared to those without such patterns. No statistically significant differences emerged when the association was analysed by gender and ethnicity. The absence of observed gender differences may be attributed to the use of a gender-specific definition of heavy episodic drinking and the inclusion of multiple medication groups in the medication variable (Silvestri et al., 2015).

A cross-sectional study in Canada focused on the association between heavy episodic drinking and antidepressant use by gender and age. The results indicated that women exhibiting

heavy episodic drinking patterns had 1.87 times higher odds of antidepressant use compared to women without such patterns. This association was not observed among men. Analysis of antidepressant use by age within heavy episodic drinkers yielded no statistically significant results (Chavarria et al., 2021). The observed gender differences may be explained by the higher frequency of mental health disorder diagnoses among women (Altemus, Sarvaiya and Neill Epperson, 2014), greater likelihood of initiating antidepressant treatment (Liddon, Kinglerlee and Barry, 2018), and more frequent overprescription of antidepressants to women (Thunander Sundbom et al., 2017).

An inverse association was examined in another cross-sectional study in Canada involving individuals aged 18 to 76 years. Among women, a positive association was found between antidepressant use and heavy episodic drinking: female respondents with depression who used antidepressants engaged in heavy episodic drinking on an average of 13.8 days in the previous year, whereas women without depression who did not use antidepressants engaged in heavy episodic drinking on an average of 6.9 days. This association was not observed among men. The researchers attributed these findings to gender differences in the pharmacological effects of antidepressants (Graham and Massak, 2007).

Overall, findings from studies examining the association between heavy episodic drinking and the use of sedatives and antidepressants according to demographic factors vary substantially. Furthermore, differences in the definitions of medications studied and heavy episodic drinking across studies preclude generalisation of the results. Nevertheless, the studies suggest a potential bidirectional association between heavy episodic drinking and antidepressant use among women. Prospective cohort studies employing standardised definitions of the cases under study would substantially advance this research area.

3. METHODOLOGY

3.1. Data Source

Secondary data from the Latvian Health Behaviour Survey database, coordinated by the Centre for Disease Prevention and Control, were used. This cross-sectional survey collected information on self-rated health, health behaviour, and use of health care services among Latvian residents aged 15 to 74 years. Participants were selected through a multistage, stratified random sampling approach with quota elements. The sample was representative of the Latvian population across key socio-demographic groups (Grīnberga et al., 2023).

Data collection occurred between 6 June 2022 and 15 November 2022 via face-to-face interviews conducted at respondents' homes. Trained interviewers from a company "Aptauju

centrs,” fluent in Latvian and Russian, administered the interviews. The survey questionnaire comprised 141 questions and was completed either electronically via Computer-Assisted Personal Interviewing or on paper via Pen-and-Paper Personal Interviewing. For quality control, a random sample of interviews was reviewed to evaluate both interview conduct and the consistency of collected information. Additionally, the quality of completed interviews was assessed post-collection through statistical analysis. Participation was voluntary, and respondent anonymity was maintained (Grīnberga et al., 2023).

The initial dataset included information from 3,548 respondents, all of whom answered questionnaire items regarding heavy episodic drinking and medication use relevant to this study. According to the WHO definition of heavy episodic drinking, 713 respondents (20.1%) reporting such drinking less frequently than once per month were excluded. The final analytical sample comprised 2,835 respondents who had either engaged in heavy episodic drinking at least once in the past 30 days or had not engaged in heavy episodic drinking during the past year.

3.2. Variables

This subsection describes the quantitative variables obtained from the Latvian Health Behaviour Survey database and the methods used to group them.

Heavy Episodic Drinking

Heavy episodic drinking was selected as the independent variable. This variable was derived from responses to the question: “How often during the past 12 months did you consume at least six alcohol units on one drinking occasion (1 unit: 40 ml of spirits, 100 ml of wine, 1 bottle [500 ml] of beer, or 1 bottle/can [approximately 300 ml] of an alcoholic cocktail)?” To characterize heavy episodic drinking patterns, respondents were offered five response options: “never,” “less than once a month,” “once a month,” “once a week,” and “almost every day.”

The grouping of responses was based on the World Health Organisation (WHO) definition of heavy episodic drinking, which is the consumption of at least 60 grams of pure alcohol on one drinking occasion at least once a month (WHO, 2018a). In this research, the response categories “almost every day,” “once a week,” and “once a month” were combined into a single group labelled “yes.” The category “never” was relabeled as “no.” The category “less than once a month” was excluded from the analysis because it did not correspond to the recall period specified in the definition. Consistent with previous studies, respondents who had never engaged in heavy episodic drinking during the previous year were used as the reference category (Busto Miramontes et al., 2019; Hargreave et al., 2010).

Medication Use

Medication use was assessed by asking respondents: “Have you used any medication during the last week (7 days)?” The response options included several types of medication for specific health complaints. For each option, respondents answered “yes” or “no” to indicate whether the specific medication had been used during the recall period. This study analysed the following medication groups: medication for headaches, medication for other types of pain, sedatives, and antidepressants.

Demographic Factors

The demographic factors, gender and age were selected as confounding variables. Gender was classified as “men” or “women,” and age was grouped into three categories: 15–34 years, 35–54 years, and 55–74 years.

3.3. Study sample

Table 3.3.1 shows the characteristics of the study sample. Women comprised 56.8% of the sample. Overall, 20.6% of respondents reported engaging in heavy episodic drinking during the past 30 days. Regarding medication use in the past 7 days, the largest proportion of respondents reported using medication for other types of pain (33.2%), while the smallest proportion reported using antidepressants (4.6%).

Table 3.3.1. Characteristics of study sample

Variable	n	%	95% CI	
Sex				
Women	1610	56.8	55.0–58.6	
Men	1225	43.2	41.4–45.0	
Age group				
15–34	784	27.7	26.0–29.3	
35–54	1018	35.9	34.2–37.7	
55–74	1033	36.4	34.7–38.2	
Heavy episodic drinking (past 30 days)				
Yes	584	20.6	19.2–22.1	
No	2251	79.4	77.9–80.8	
Medication use (past 7 days)				
Medication for headaches	Yes	878	31.0	29.3–32.7
	No	1957	69.0	67.3–70.7
Medication for other types of pain	Yes	942	33.2	31.5–35.0
	No	1893	66.8	65.0–68.5
Sedatives	Yes	440	15.5	14.2–16.9
	No	2395	84.5	83.1–85.8
Antidepressants	Yes	130	4.6	3.9–5.4
	No	2705	95.4	94.6–96.1

3.4. Statistical Analysis

Descriptive and analytical statistical methods were employed for data analysis. Descriptive analysis involved calculating absolute and relative frequencies of independent and dependent variables within the study population. Group differences were assessed using the Chi-square test.

Univariable and multivariable binary logistic regression models were applied to evaluate the effect of the independent variable on the dependent variables.

- Model I estimated crude odds ratios for medication use in relation to heavy episodic drinking.
- Model II estimated odds ratios adjusted for demographic factors for medication use in relation to heavy episodic drinking.
- Model III estimated odds ratios for medication use in relation to heavy episodic drinking, incorporating an interaction term between gender and heavy episodic drinking.

When an interaction between gender and heavy episodic drinking was identified in the logistic regression model, a gender-stratified logistic regression analysis was conducted to evaluate the association between heavy episodic drinking and medication use within each gender group separately.

Statistical significance was determined using 95% confidence intervals and a significance level of $p < 0.05$. The Wilson method was used to calculate confidence intervals for proportions, while the two-sample z-test was used to calculate confidence intervals for differences between two proportions. These calculations were performed using EpiTools – Epidemiological Calculators. Data analysis was conducted in IBM SPSS (version 31.0). Microsoft Office Excel was employed for data visualisation.

4. RESULTS

4.1. Prevalence of Heavy Episodic Drinking by Demographic Factors in Latvia

4.1.1. Prevalence of Heavy Episodic Drinking by Gender

The prevalence of heavy episodic drinking is 9.5% among women and 35.1% among men, indicating a difference of 25.6 percentage points (95% CI 22.6 to 28.6) (see Figure 4.1.1). This gender difference is statistically significant ($p < 0.001$).

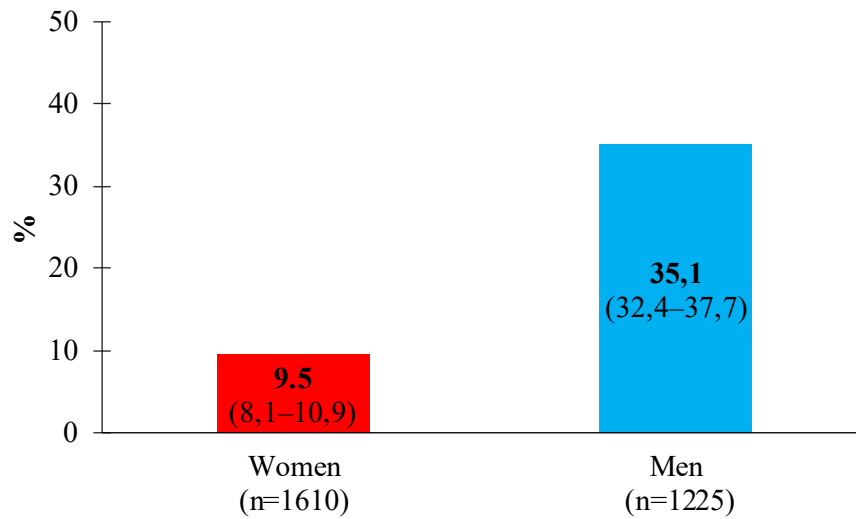


Figure 4.1.1. **Prevalence of Heavy Episodic Drinking by Gender**

4.1.2. **Prevalence of Heavy Episodic Drinking by Age Groups**

Among respondents aged 35 to 54 years, the prevalence of heavy episodic drinking is 10.0 percentage points higher (95% CI 6.5 to 13.5), compared with those aged 55 to 74 years (16.3%). It is also 7.4 percentage points higher (95% CI 3.5 to 11.3) than among respondents aged 15 to 34 years (18.9%) (see Table 4.1.1).

Statistically significant differences in the prevalence of heavy episodic drinking were observed between the age groups 15 to 34 years and 35 to 54 years ($p < 0.001$), as well as between 35 to 54 years and 55 to 74 years ($p < 0.001$). In contrast, the difference between respondents aged 15 to 34 years and 55 to 74 years was not statistically significant ($p = 0.14$).

Across all age groups, women exhibited a substantially lower prevalence of heavy episodic drinking than men (see Figure 4.1.2). For both men ($p = 0.006$) and women ($p < 0.001$), the prevalence of heavy episodic drinking was significantly higher in the 35 to 54 years age group than in the 15 to 34 years age group. Among women, statistically significant differences were also observed between the 35 to 54 years and 55 to 74 years age groups ($p < 0.001$). However, among men, no statistically significant differences were found between these age groups ($p = 0.08$). Similarly, no statistically significant differences in the prevalence of heavy episodic drinking were observed between the 15 to 34 years and 55 to 74 years age groups for either men ($p = 0.34$) or women ($p = 0.12$).

Table 4.1.1. Prevalence of Heavy Episodic Drinking by Age Groups

		Yes	No	Total
15–34	n	148	636	784
	%	18.9	81.1	100.0
	95% CI	16.3–21.8	78.2–83.7	
35–54	n	268	750	1018
	%	26.3	73.7	100.0
	95% CI	23.7–29.1	70.9–76.3	
55–74	n	168	865	1033
	%	16.3	83.7	100.0
	95% CI	14.1–18.6	81.4–85.9	
Total	n	584	2251	2835
	%	20.6	79.4	100.0
	95% CI	19.2–22.1	77.9–80.8	

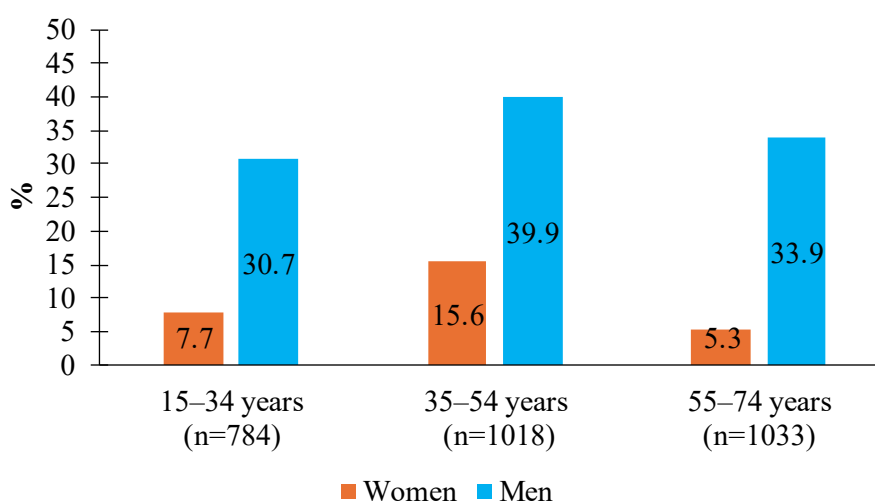


Figure 4.1.2. Prevalence of Heavy Episodic Drinking by Age and Gender Groups

4.2. Prevalence of Medication Use by Demographic Factors in Latvia

4.2.1. Prevalence of Medication Use by Gender

Women used all analysed medications more than men (see Table 4.2.1). For both genders, medications for other types of pain were the most frequently used, reported by 37.3% of women and 27.9% of men. Compared to men, women had a 13.7 percentage point higher prevalence of headache medication use (95% CI 10.3–17.4), 12.3 percentage points higher for sedatives (95% CI 9.6–15.0), and 2.3 percentage points higher for antidepressants (95% CI 0.7–3.9). These gender differences in analgesic use ($p < 0.001$), sedative use ($p < 0.001$), and antidepressant use ($p = 0.005$) were statistically significant.

Table 4.2.1. Prevalence of Medication Use by Demographic Factors

Variable	Medication Use for Headaches		Medication Use for Other Types of Pain		Sedatives Use		Antidepressant Use	
	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Gender								
Women	594	36.9 (34.6–39.3)	600	37.3 (34.9–39.7)	336	20.9 (19.0–22.9)	90	5.6 (4.6–6.8)
Men	284	23.2 (20.9–25.6)	342	27.9 (25.5–30.5)	105	8.6 (7.1–10.3)	41	3.3 (2.5–4.5)
Age group								
15–34	207	26.4 (23.4–29.6)	178	22.7 (19.9–25.8)	63	8.0 (6.3–10.1)	18	2.3 (1.5–3.6)
35–54	343	33.7 (30.9–36.7)	346	34.0 (31.1–37.0)	158	15.5 (13.4–17.9)	56	5.5 (4.3–7.1)
55–74	328	31.8 (29.0–34.7)	418	40.5 (37.5–43.5)	220	21.3 (18.9–23.9)	56	5.4 (4.2–7.0)

4.2.2. Prevalence of Medication Use by Age Groups

Significant differences in medication use prevalence were also observed across age groups. In the past 7 days, respondents aged 35–54 years most frequently used headache medication (33.7%), followed by those aged 55–74 years (31.8%) and 15–34 years (26.4%) (see Table 4.2.1). Statistically significant differences in headache medication use were found between the 15–34 and 55–74 years groups ($p=0.01$) and between the 15–34 and 35–54 years groups ($p < 0.001$). No significant difference was found between the 35–54 and 55–74 years groups ($p=0.37$).

The prevalence of medication use for other types of pain was 6.5 percentage points higher (95% CI 2.3–10.7) among respondents aged 55–74 years compared to those aged 35–54 years, and 17.8 percentage points higher (95% CI 13.4–22.1) compared to those aged 15–34 years (see Table 4.2.1). These differences were statistically significant ($p < 0.001$).

Similarly, sedative use prevalence was higher among respondents aged 55–74 years (21.3%) and lower among those aged 15–34 years (8.0%) (see Table 4.2.1). These age-group differences were statistically significant ($p<0.001$).

The smallest age-related differences were observed in antidepressant use (see Table 4.2.1). The prevalence in the 15–34 years group was 3.2 percentage points lower (95% CI 1.4–5.1) than in the 35–54 years group ($p<0.001$) and 3.1 percentage points lower (95% CI 1.3–4.9) than in the 55–74 years group ($p<0.001$). No significant difference was found between the 35–54 and 55–74 years groups ($p=0.94$).

4.3. Association between heavy episodic drinking and medication use

4.3.1. Prevalence of Medication Use in Relation to Heavy Episodic Drinking

Overall, no statistically significant differences in medication use prevalence were observed between heavy episodic drinkers and non-heavy episodic drinkers ($p > 0.05$) (see Table 4.3.1.).

Table 4.3.1. Prevalence of Medication Use in Relation to Heavy Episodic Drinking

Variable	Medication Use for Headaches		Medication Use for Other Types of Pain		Sedatives Use		Antidepressant Use	
	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Heavy Episodic Drinking								
Yes	177	30.3 (26.7–34.2)	186	31.8 (28.2–35.7)	79	13.5 (11.0–16.5)	22	3.8 (2.5–5.6)
No	701	31.1 (29.2–33.1)	757	33.6 (31.7–35.6)	361	16.0 (14.6–17.6)	108	4.8 (4.0–5.8)

4.3.2. Association Between Heavy Episodic Drinking and Medication Use for Headaches

The crude odds ratios for headache medication use in relation to heavy episodic drinking was not statistically significant ($p=0.69$) (see Table 4.3.2. 1.). After adjusting for age and gender, the odds ratio increased to 1.25, reaching statistical significance at the threshold level ($p=0.05$). Additionally, the third logistic regression model revealed a statistically significant interaction between gender and heavy episodic drinking regarding headache medication use ($p=0.003$).

Table 4.3.2.1. Odds of Using Medication for Headaches According to Demographic Factors and Heavy Episodic Drinking

Variable	Model 1		Model 2		Model 3	
	OR (95% CI)	p	aOR (95% CI)	p	aOR (95% CI)	p
Gender						
Men	Ref. 1.93 (1.64–2.30)	<0.001	Ref. 2.04 (1.71–2.44)	<0.001	Ref. 1.78 (1.46–2.17)	<0.001
Women						
Age group						
15–34	Ref. 1.42 (1.15–1.74)	– <0.001	Ref. 1.36 (1.10–1.67)	– 0.004	Ref. 1.35 (1.09–1.66)	– 0.005
35–54						
55–74	1.30 (1.06–1.59)	0.01	1.22 (0.99–1.50)	0.06	1.23 (1.00–1.52)	0.05
Heavy episodic drinking						
No	Ref. 0.96 (0.79–1.17)	– 0.69	Ref. 1.25 (1.01–1.54)	– 0.05	Ref. 0.96 (0.72–1.27)	– 0.76
Yes						
Heavy episodic drinking × gender						
No × men	–	–	–	–	Ref. 1.93 (1.25–2.98)	– 0.003
Yes × women	–	–	–	–		

Ref. – reference category;

Model 1 – crude odds ratios;

Model 2 – adjusted odds ratios for age, gender, and heavy episodic drinking;

Model 3 – additionally adjusted for the interaction between heavy episodic drinking and gender.

The gender-stratified analysis, adjusted for age, revealed that women engaging in heavy episodic drinking had nearly twice the odds of using headache medication compared to women who did not engage in heavy episodic drinking ($p < 0.001$) (see Table 4.3.2.2.). In contrast, this association was not statistically significant among men ($p=0.76$).

Table 4.3.2.2. Odds of Medication Use for Headaches Stratified by Gender, According to Age, and Heavy Episodic Drinking

Variable	Men		Women	
	Model 1 OR (95% CI)	Model 2 aOR (95% CI)	Model 1 OR (95% CI)	Model 2 aOR (95% CI)
Age group				
15–34	Ref. 1.47* (1.05–2.07)	Ref. 1.48* (1.05–2.08)	Ref. 1.33* (1.02–1.73)	Ref. 1.27 ^{NS} (0.97–1.65)
35–54				
55–74	1.73** (1.23–2.44)	1.74** (1.23–2.45)	0.99 ^{NS} (0.77–1.29)	1.01 ^{NS} (0.77–1.32)
Heavy Episodic Drinking				
No	Ref. 0.98^{NS} (0.74–1.29)	Ref. 0.96^{NS} (0.72–1.27)	Ref. 1.90*** (1.36–2.66)	Ref. 1.80*** (1.28–2.53)
Yes				

Ref. – reference category;

Model 1 – crude odds ratios;

Model 2 – odds ratios adjusted for age and heavy episodic drinking;

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; NS – not statistically significant.

4.3.3. Association Between Heavy Episodic Drinking and Medication Use for Other Types of Pain

Among respondents engaging in heavy episodic drinking, neither the crude nor adjusted odds of medication use for other types of pain differed significantly compared to respondents who did not engage in heavy episodic drinking (see Table 4.3.3.1.).

A statistically significant interaction between gender and heavy episodic drinking regarding medication use for other types of pain was observed ($p=0.04$).

Table 4.3.3.1. Odds of Using Medication for Other Types of Pain According to Demographic Factors and Heavy Episodic Drinking

Variable	Model 1		Model 2		Model 3	
	OR (95% CI)	P	aOR (95% CI)	P	aOR (95% CI)	P
Gender						
Men	Ref.		Ref.		Ref.	
Women	1.53 (1.31–1.80)	<0.001	1.50 (1.27–1.79)	<0.001	1.38 (1.14–1.67)	<0.001
Age group						
15–34	Ref.	–	Ref.	–	Ref.	–
35–54	1.75 (1.42–2.16)	<0.001	1.71 (1.39–2.12)	<0.001	1.70 (1.38–2.11)	<0.001
55–74	2.31 (1.88–2.85)	<0.001	2.24 (1.81–2.76)	<0.001	2.25 (1.82–2.78)	<0.001
Heavy episodic drinking						
No	Ref.	–	Ref.	–	Ref.	–
Yes	0.92 (0.76–1.12)	0.42	1.09 (0.89–1.35)	0.40	0.93 (0.71–1.21)	0.58
Heavy episodic drinking × gender						
No × Men	–	–	–	–	Ref.	–
Yes × Women	–	–	–	–	1.56 (1.01–2.40)	0.04

Ref. – reference category;

Model 1 – crude odds ratios;

Model 2 – adjusted odds ratios for age, gender, and heavy episodic drinking;

Model 3 – additionally adjusted for the interaction between heavy episodic drinking and gender.

The gender-stratified analysis of the association between heavy episodic drinking and the use of medication for other types of pain, regardless of age, indicated that women who engaged in heavy episodic drinking had 1.48 times higher odds of using such medication compared to women who did not engage in heavy episodic drinking ($p=0.03$) (see Table 4.3.3.2.). In contrast, among men, the odds of using medication for other types of pain did not differ significantly between heavy episodic drinkers and non-heavy episodic drinkers ($p=0.52$).

Table 4.3.3.2. Odds of Medication Use for Other Types of Pain Stratified by Gender, According to Age, and Heavy Episodic Drinking

Variable	Men		Women	
	Model 1	Model 2	Model 1	Model 2
	OR (95% CI)	aOR (95% CI)	OR (95% CI)	aOR (95% CI)
Age Group				
15–34	Ref. 2.02*** (1.45–2.81)	Ref. 2.04*** (1.46–2.84)	Ref. 1.54** (1.17–2.03)	Ref. 1.49** (1.13–1.98)
35–54	2.41*** (1.73–3.37)	2.42*** (1.73–3.38)	2.11*** (1.61–2.76)	2.13*** (1.63–2.79)
55–74				
Heavy Episodic Drinking				
No	Ref.	Ref.	Ref.	Ref.
Yes	0.95^{NS} (0.73–1.24)	0.92^{NS} (0.70–1.20)	1.40* (1.00–1.95)	1.48* (1.05–2.08)

Ref. – reference category;

Model 1 – crude odds ratios;

Model 2 – odds ratios adjusted for age and heavy episodic drinking;

*p<0.05; **p<0.01; ***p<0.001; NS – not statistically significant.

4.3.4. Association Between Heavy Episodic Drinking and Sedatives Use

No statistically significant differences in the odds of sedative use related to heavy episodic drinking were observed before or after adjustment ($p > 0.05$) (see Table 4.3.4.1.). However, the third regression model revealed a statistically significant interaction between heavy episodic drinking and gender ($p < 0.001$).

Table 4.3.4.1. Odds of Sedative Use According to Demographic Factors and Heavy Episodic Drinking

Variable	Model 1		Model 2		Model 3	
	OR (95% CI)	P	aOR (95% CI)	P	OR (95% CI)	P
Gender						
Men	Ref.		Ref.		Ref.	
Women	2.82 (2.23–3.56)	<0.001	2.88 (2.24–3.70)	<0.001	2.25 (1.71–2.96)	<0.001
Age Group						
15–34	Ref.	–	Ref.	–	Ref.	–
35–54	2.12 (1.55–2.88)	<0.001	2.02 (1.48–2.76)	<0.001	1.99 (1.45–2.72)	<0.001
55–74	3.12 (2.31–4.20)	<0.001	2.92 (2.16–3.94)	<0.001	2.98 (2.20–4.03)	<0.001
Heavy Episodic Drinking						
No	Ref.	–	Ref.	–	Ref.	–
Yes	0.82 (0.63–1.07)	0.14	1.28 (0.96–1.70)	0.10	0.73 (0.47–1.14)	0.17
Heavy Episodic Drinking × Gender						
No × men	–	–	–	–	Ref.	–
Yes × women	–	–	–	–	2.75 (1.55–4.90)	<0.001

Ref. – reference category;

Model 1 – crude odds ratios;

Model 2 – adjusted odds ratios for age, gender, and heavy episodic drinking;

Model 3 – additionally adjusted for the interaction between heavy episodic drinking and gender.

Analysis of the association between heavy episodic drinking and sedative use by gender, regardless of age, indicates that women exhibiting heavy episodic drinking patterns had twice the odds of sedative use compared to women without these patterns ($p < 0.001$) (see Table 4.3.4.2).

In contrast, among men, heavy episodic drinkers exhibited lower odds of sedative use compared to men who did not engage in heavy episodic drinking; however, this difference was not statistically significant ($p=0.16$).

Table 4.3.4.2. Odds of Sedative Use Stratified by Gender, According to Age, and Heavy Episodic Drinking

Variable	Men		Women	
	Model 1	Model 2	Modelis 1	Model 2
	OR (95% CI)	aOR (95% CI)	OR (95% TI)	aOR (95% CI)
Age Group				
15–34	Ref. 1.99*	Ref. 2.06*	Ref. 2.09***	Ref. 1.97***
35–54	(1.15–3.49)	(1.18–3.60)	(1.44–3.05)	(1.35–2.87)
55–74	2.30** (1.32–4.02)	2.32** (1.33–4.07)	3.17*** (2.22–4.55)	3.27*** (2.28–4.69)
Heavy Episodic Drinking				
No	Ref.	Ref.	Ref.	Ref.
Yes	0.75^{NS} (0.49–1.17)	0.73^{NS} (0.47–1.13)	1.88*** (1.31–2.70)	2.08*** (1.43–3.03)

Ref. – reference category;

Model 1 – crude odds ratios;

Model 2 – odds ratios adjusted for age and heavy episodic drinking;

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; NS – not statistically significant.

4.3.5. Association Between Heavy Episodic Drinking and Antidepressant Use

Respondents who engaged in heavy episodic drinking exhibited lower crude and adjusted odds of antidepressant use compared to those who did not, although these differences were not statistically significant ($p > 0.05$) (see Table 4.3.5.1.). In the third logistic regression model, the interaction between heavy episodic drinking and gender reached statistical significance at the threshold level ($p=0.05$).

Table 4.3.5.1. Odds of Antidepressant Use According to Demographic Factors and Heavy Episodic Drinking

Variable	Model 1		Model 2		Model 3	
	OR (95% CI)	P	aOR (95% CI)	P	OR (95% CI)	P
Gender						
Men	Ref.		Ref.		Ref.	
Women	1.73 (1.18–2.52)	0.005	1.63 (1.09–2.42)	0.02	1.33 (0.86–2.04)	0.20
Age Group						
15–34	Ref.	–	Ref.	–	Ref.	–
35–54	2.42 (1.41–4.13)	0.001	2.38 (1.39–4.08)	0.002	2.35 (1.37–4.03)	0.002
55–74	2.40 (1.40–4.09)	0.001	2.28 (1.33–3.90)	0.003	2.32 (1.36–3.97)	0.002
Heavy Episodic Drinking						
No	Ref.	–	Ref.	–	Ref.	–
Yes	0.78 (0.49–1.25)	0.30	0.92 (0.56–1.51)	0.74	0.56 (0.27–1.16)	0.12
Heavy Episodic Drinking × Gender						
No × men	–	–	–	–	Ref.	–
Yes × women	–	–	–	–	2.69 (1.02–7.05)	0.05

Ref. – reference category;

Model 1 – crude odds ratios;

Model 2 – adjusted odds ratios for age, gender, and heavy episodic drinking;

Model 3 – additionally adjusted for the interaction between heavy episodic drinking and gender.

Further analysis of the gender-stratified and age-adjusted association between heavy episodic drinking and antidepressant use indicated that, for both men and women, neither the adjusted nor the crude results showed statistically significant differences ($p > 0.05$) (see Table 4.3.5.2.).

Table 4.3.5.2. Odds of Antidepressant Use Stratified by Gender, According to Age, and Heavy Episodic Drinking

Variable	Men		Women	
	Model 1 OR (95% CI)	Model 2 aOR (95% CI)	Model 1 OR (95% TI)	Model 2 aOR (95% CI)
Age Group				
15–34	Ref.	Ref.	Ref.	Ref.
35–54	2.00 ^{NS} (0.80–4.98)	2.09 ^{NS} (0.84–5.24)	2.55 ^{**} (1.31–4.96)	2.47 ^{**} (1.27–4.82)
55–74	2.71 [*] (1.11–6.64)	2.76 [*] (1.13–6.76)	2.12 [*] (1.08–4.13)	2.14 [*] (1.10–4.18)
Heavy Episodic Drinking				
No	Ref.	Ref.	Ref.	Ref.
Yes	0.58^{NS} (0.28–1.21)	0.57^{NS} (0.27–1.17)	1.55^{NS} (0.83–2.91)	1.45^{NS} (0.77–2.75)

Ref. – reference category;

Model 1 – crude odds ratios;

Model 2 – odds ratios adjusted for age and heavy episodic drinking;

* $p < 0.05$; ** $p < 0.01$; NS – not statistically significant.

5. CONCLUSIONS

1. During the past month, 35.1% of men and 9.5% of women engaged in heavy episodic drinking.
2. The prevalence of heavy episodic drinking is consistently higher among men than women across all age groups.
3. The prevalence of analyzed medication use is substantially higher among women than men: 36.9% of women and 23.2% of men used medication for headaches; 37.3% of women and 27.9% of men used medication for other types of pain; 20.9% of women and 8.6% of men used sedatives; and 5.6% of women and 3.3% of men used antidepressants.
4. A statistically significant interaction by gender was observed in the association between heavy episodic drinking and medication use.
5. Among women, heavy episodic drinking, regardless of age, is associated with nearly a twofold increase in the odds of using medication for headaches. This association was not observed among men.
6. The adjusted odds of using medication for other types of pain are approximately 1.5 times higher among women exhibiting heavy episodic drinking patterns compared with women without such patterns. This association was not observed among men.
7. Among women, heavy episodic drinking, regardless of age, is associated with a twofold increase in the odds of sedative use. This association was not observed among men.
8. Heavy episodic drinking was not associated with antidepressant use in either gender.

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