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Characterization of Alcohol Use Disorder using Alcohol Use Disorder Identification Test (AUDIT) - A Prospective, Observational Study

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Abstract

Alcohol Use Disorder (AUD) is a major public health issue globally, with India having approximately 2 crore people affected. It impacts various Sustainable Development Goals (SDGs), including those related to health, education, and social stability. There is limited research on alcohol consumption patterns, dependence, and sociodemographic influences in regions like Telangana and India. Though there are several questionnaires, The Alcohol Use Disorders Identification Test (AUDIT), developed by the WHO, is the most effective tool for identifying risky alcohol consumption and has been widely used to assess AUD severity. Therefore, this study aims to fill that gap by using the AUDIT tool to assess alcohol use, dependence, and hazardous drinking behaviours, while exploring the role of sociodemographic factors (age, gender, education, etc.) in these patterns. It is a Prospective, observational study. AUDIT includes questions on three different domains and categorizes participants into levels of alcohol risk: low risk, hazardous use, harmful use, and alcohol dependence. While 25% of the study population consumed harmful quantities of alcohol up to 720ml a day, 67% admitted they were unable to be abstinent for at least a week and hence consumed continuously 62% were unable to work continuously due to this disorder.48% needed their first drink in the morning every week and 30% needed it almost daily. AUDIT tool has been an effective way of identifying the problematic alcohol consumption in the sample population and also to identify the rate, and stepwise patterns of disorder using different domains of the questionnaire, this study also throws light into various patterns of alcohol consumption so that treatment can be planned effectively.

Keywords: *Abstinence, Abuse, Alcohol Use Disorder, Dependence, Hazardous Use.*

Introduction

Since ancient times, alcohol has been consumed extensively in various cultures. Ethanol, the psychoactive ingredient in alcohol and its derivatives, can cause dependence [1]. Various socioeconomic and personal factors such as family status, stress, financial burdens, peer influence, along with individual personality traits and contribute to the initiation of alcohol consumption and addiction [2]. Excessive alcohol use can eventually lead to dependence.

Alcohol dependence is a loss of control of their alcohol consumption [3]. Alcohol abuse is a drinking pattern due to tolerance and physiological dependence; it could lead to detrimental effects. It has been proposed that the shift from moderate to frequent, high and uncontrolled alcohol use is mostly due to neuroadaptive modifications brought on by prolonged alcohol use and abuse [4, 5]. This is generally called an Alcohol use disorder [5, 6].

Alcohol use disorder (AUD) includes medical conditions like alcoholism, alcohol abuse, alcohol dependence, or alcohol

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addiction. It is defined as a diminished capacity to reduce or manage alcohol consumption despite negative social, professional, or health outcomes [7]. AUD is considered a brain disorder. The three major risk factors for AUD are consumption of alcohol at an early age, genetics and family history of alcoholism, and a wide range of mental health conditions. The spectrum of AUDs can be mild, moderate and severe [8].

Alcohol is associated with significant health risks and harms, like road transport accidents, illnesses, various disorders, and social and legal challenges. It also causes cancers, liver diseases and a variety of medical conditions like hypertension, diabetes, strokes, and injuries, falls. Alcohol is associated with all neuropsychiatric disorders as well [9]. Alcohol has been linked to influence adversely on 13 Sustainable Development Goals (SDGs), as well as impacting multiple health-related targets within the SDGs [10, 11].

Alcohol affects various brain regions like the frontal cortex, hippocampus, cerebellum and limbic system affecting decision-making, memory function, coordination and emotional balance respectively altering mood, cognition, and behaviour [12] Alcohol enhances neurotransmitters such as gamma amino butyric acid (GABA) and dopamine and inhibits glutamate transmission [13].

India has about 2 crore alcohol-dependent people. 18.8% of men and 1.3% of women consume alcohol [14]. The states with the highest prevalence of alcohol use are Chhattisgarh, Tripura, Punjab, Arunachal Pradesh and Goa [15]. Consumption patterns of Alcohol among men are highest in Arunachal Pradesh (53%) followed by Telangana (43%), Sikkim (40%), Manipur (37%), Goa (36%), and Jharkhand and Chhattisgarh (35%). The pattern of alcohol consumption in women is Arunachal Pradesh (24%), Sikkim (7%), Telangana (7%), Chhattisgarh (6%) and Tripura (6%) [15, 16].

Very few studies have been carried out on the amount of alcohol consumed, dependence and abuse behaviours, and hazardous alcohol use in different regions of India. The assessment of the prevalence as well as patterns of alcohol consumption is crucial in developing treatments to reduce alcohol use and prevent short- and long-term effects of alcohol use.

Clinicians generally use biochemical and questionnaire-based methods for assessment.

Though many Questionnaire-based tools have been devised for assessment, AUDIT (Alcohol Use Disorders Identification Test) is one of the widely used tests. It is a ten-item questionnaire to categorize patients according to the severity of Alcohol Use Disorder. World Health Organization (WHO) developed AUDIT for identifying harmful, dependent and abusive patterns of alcohol consumption [17].

The AUDIT has been validated by multiple studies and achieved improved sensitivity and specificity values based on different cut-off points [18]. Saunders and colleagues studied the effectiveness of the Alcohol Use Disorders Identification Test (AUDIT) on the ability of the AUDIT score to diagnose hazardous or harmful alcohol use, with a specific focus on the cutoff score of 8 [17]. The main findings of this paper by Saunders et al are the association between an AUDIT score use of alcohol as hazardous or harmful, and also application of AUDIT as a simple method for early detection on an out-patient basis [17]. The AUDIT has been used extensively in many countries for screening and identification of harmful patterns of alcohol consumption.

The AUDIT differs from other screening tests as it was developed using data from a large international sample, it focused on identifying risk over long-term dependency and negative drinking outcomes, also there is a statistical rationale for item selection. Also, AUDIT is mainly based on symptoms that have occurred recently rather than in the long term [19].

There is a paucity of literature regarding studies on alcohol use disorder, the role of socio-demographics, and harmful and hazardous drinking patterns in Telangana as

well as different regions of India. Hence this study was planned to study alcohol consumption patterns, dependence and hazardous use, role of sociodemographics in the same.

Methodology

It is a prospective, observational, single-centric study conducted in the psychiatry department of a tertiary care hospital for 6 months.100 patients were recruited for the study above the age of 18. Patients above the age of 18, both genders who visit the psychiatry department and are diagnosed with alcohol dependence/AUD were included in the study. Ethical committee clearance was obtained. Informed consent was obtained in the language they understand (Telugu/English). Socio-demographic data like age, gender, education, marital status, socio-economic status, and occupation were recorded. History of initial alcohol consumption, No. of years of alcohol abuse/dependence, volume of alcohol consumed, and data on other comorbid conditions for admission and complications were collected. Ethical committee clearance was obtained from the hospital.

A pretested and validated AUDIT (Alcohol Use Disorder Identification Test) questionnaire from WHO was used to assess the pattern of alcohol use. AUDIT includes questions on three different domains Hazardous alcohol use, Alcohol dependence and Harmful alcohol use. Each domain has 3 or 4 questions. Domain 1, Hazardous alcohol use, has questions on frequency of drinking, quantity of alcohol consumption and frequency of heavy drinking. Domain 2 is about the assessment of Alcohol dependence and has questions on impaired control over drinking, increased salience of drinking and morning drinking. Domain 3 assesses Harmful alcohol use and has questions on Guilt after drinking, Blackouts and Alcohol-related injuries [20]. The range of scores is from 0 to 40, and the cut-off point of 8 is considered as a potentially hazardous alcohol intake.

Mean AUDIT scores were calculated, mean and the percentage of the study sample reporting a certain score for each question was calculated. The overall pattern of Alcohol use disorder was calculated. GraphPad Prism 10 software was used for data analysis and graphs.

Results

The age group of patients was between 18 and 80 years. Out of that, 77% were male, and 23% were female. Most of the men i.e. 65% were between the age of 25 to 50, followed by 31% between the age group 51 to 75.70% of women between 50 and 70 years old. 26% of women were between 25-50 years old (Table 1) 90% were married, 5% were unmarried, and 5% were widowed (Table 2).

The entire study population was from a lower socio-economic group, 97% were uneducated and never went to school while 3% completed their schooling (Table 3). 55% work in jobs that have physical strain like driving, daily wage labour, fishing, sweeping, painting, 23% are farmers and 23% do not work or worked previously and stopped (Table 4).

All the participants screened indulge in alcohol consumption at least once daily.

Table 1. Gender Division according to Age Group of the Sample Population

Age Group(Y)	**Men (%)**	**Women (%)**
18-25	3%	0
26-50	65%	26%
51-75	31%	70%
76-100	1%	4%
Total (%)	**77%**	**23%**

Table 2. Marital Status of the Sample Population

Marital status (%)	
Married	90%
Unmarried	5%
Widowed	5%

Table 3. Literacy Status of the Sample Population

Education (%)	
Uneducated	97%
High school	3%

Table 4. Employment Status of the Sample Population

Employment status (%)	
Daily labor work	55%
Farmer	23%
Unemployed	22%

Age of Initiation of Alcohol Consumption

The mean age of initiation of alcohol consumption was found to be 27. Patients who started consuming alcohol even before the age of 20 were 28%, and 72% of patients started consuming alcohol between the ages of 20 and 40.

Volume of Alcohol Consumed in a Day

The mean volume of alcohol consumption was found to be approximately 400 ml. Almost all the admitted patients, though initially weekly drinkers, due to pleasure, sleep and addiction, increased the frequency of daily drinking, 42% consume alcohol between up to 180ml daily, 22% consume up to 360 ml, 25% consume up to 700ml and 11% were found to be heavy drinkers who consume around 1000-1300ml per day, with the frequency of more than two drinks per day(Figure 1).

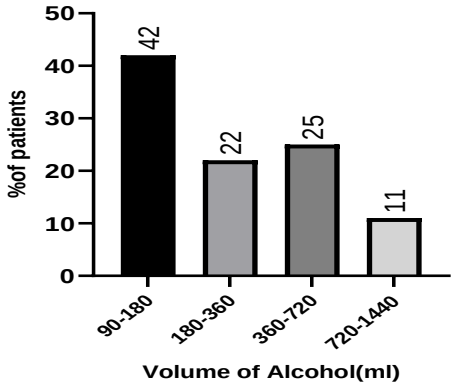

Figure 1. Volume of Alcohol Consumed in a Day

Other comorbid somatic disorders with which patients were admitted were that 42% had fall or road transport accidents, 20% had liver diseases and hypertension, 14% with Diabetes mellitus, and 11% had seizures, electrolyte disturbances and respiratory problems. 8% of the population suffered from pancreatitis, diabetes and electrolyte abnormalities (Figure 2).

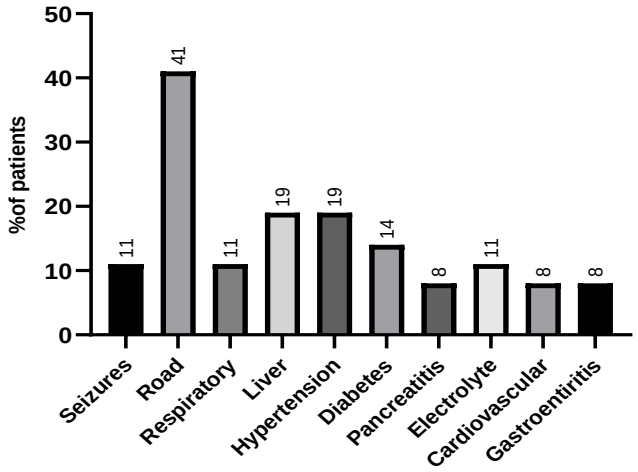

Figure 2. Other Comorbid Conditions During Admission

AUDIT Score Results

The mean of total AUDIT scores was found to be 23.

Domain 1: Hazardous alcohol use

All the patients in the study consume alcohol more than 4 days a week, almost daily once or twice a day and consume more than 6 drinks in a day in a month.

Domain 2: Dependence symptoms

9% of patients were under hazardous drinking and unable to maintain abstinence from alcohol for even a day. 67% of patients reported that they were unable to stop drinking for at least a week (Figure 3).

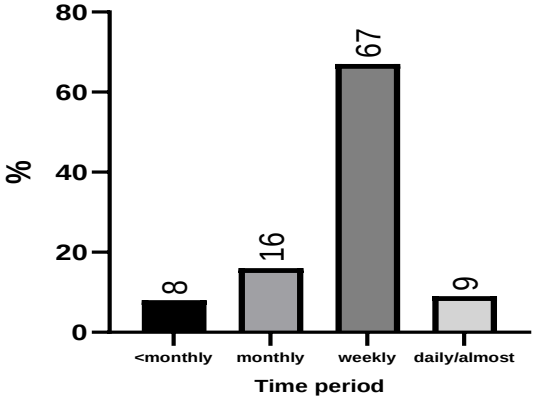

Figure 3. % of Patients unable to Maintain Abstinence from Alcohol

13% of patients resorted to extreme addiction, affecting their work and personal lives almost every day. 62% were unable to work or perform their expected activities, affecting their lifestyle for at least a week (Figure 4). 30% of the study population reported that they needed their first drink in the morning almost daily to get going, and 48% needed a morning dose of alcohol almost every week (Figure 5).

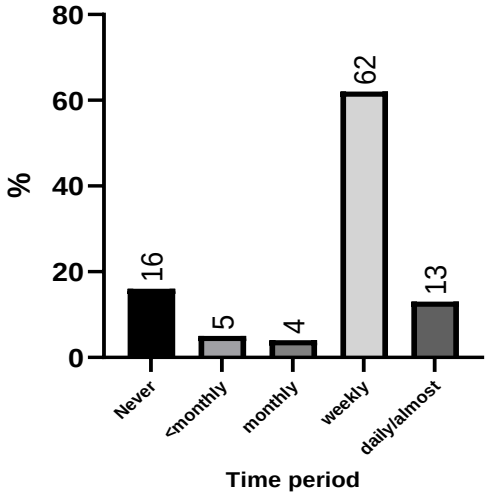

Figure 4. % of Patients whose Work got Affected due to Alcohol use Disorder

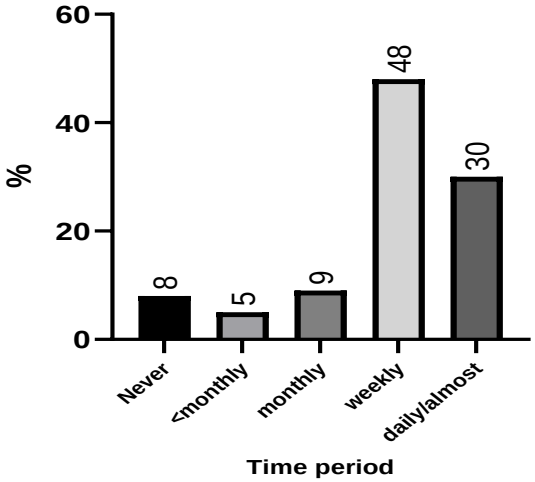

Figure 5. % of Patients who Needed First Drink in the Morning

Domain 3: Harmful alcohol use

60% of the study population reported they had feelings of guilt almost every week due to their alcohol addiction and 52% reported that they were injured due to alcohol abuse. Almost 70% reported that their family wanted them to stop consuming alcohol.

Complications of Alcohol Dependence and Withdrawal

Out of the study population, 2% had paranoid schizophrenia, 8% had delirium & hallucinations, 5% were nicotine dependent as well, and one had OCD.

Discussion

Very little literature is available regarding studies on alcohol use in the Indian population. The pattern of alcohol addiction is different in men and women. While majority of men admitted to the hospital due to alcohol use disorder were during adulthood, between the age groups 25 to 50. women were between 51 to 75 years old. This could be attributed to multiple reasons. Men admitted they started consuming and were dependent on alcohol due to peer pressure from friends, poverty and unemployment. Occupational factors also play a major role in alcohol consumption patterns in

men. As most of the men are involved in occupations that have physical strain like driving, lifting loads, and farming they resort to alcohol for relief from tiredness and sleep inducer at the end of the day. Women resorted to alcohol consumption due to loneliness, lack of sleep, fatigue due to work, and pressure from friends.

The mean age of alcohol consumption was found to be 26, the majority of the study population started consuming alcohol between the age group of 20 to 30. In another study, the male gender and adult age group were independent predictors of alcohol use. Similarly, illiteracy and poor educational levels were linked to an increased risk of alcohol use in the general population [21].

11% of the study sample were found to indulge in heavy drinking of more than 700ml up to 1000ml per day, while 25% used to consume more than 360ml up to 720ml per day. This result coincided with a study by Nubukpo P et al. where Mean daily consumption (TAC) was found to be as high as 10 units per day with 34.6 % of the sample and 51.6 % had 5–8 units per day [22]. 30% of the sample needed a first drink in the morning to continue their day, 78% reported their work got affected due to their drinking behaviour almost every day and week and 50 % were injured due to alcohol abuse. 70% were suggested to maintain abstinence from alcohol.

9% were found to be hazardous drinkers, this result is similar to a study conducted by SAMHSA [23]. 13% of patients resorted to extreme addiction, affecting their work and personal lives almost every day. This matches with that of the CDC, that 17% of adults binge drink, which implies exceeding 4 or 5 drinks at a time [24]. In 2019, 8.4% of the EU population aged 15 and over reported drinking alcohol daily [25]. According to a publication in the BMJ Mental Health, self-stigma, which includes feelings of guilt increases with alcohol use disorders [26], this study showed that 60% of the population were bothered by guilt due to drinking, almost every week but were unable to stop drinking. According to the NIAAA, individuals with severe alcohol use disorder often experience withdrawal symptoms in the morning, leading them to consume alcohol to alleviate these symptoms [27].

In this study, while 30% needed a first drink in the morning, 48% needed at least weekly to get going. The Journal of Substance Abuse Treatment published a study revealing that 35% of participants with severe alcohol use disorder reported needing a morning drink almost daily, while 50% needed it at least weekly. This data highlights the significant dependency on alcohol among individuals with severe alcohol use disorder, particularly the need for a morning drink to manage withdrawal symptoms or to start their day [28]. According to the National Institute of alcohol abuse and Alcoholism, alcohol is involved in about 60% of fatal burn injuries, drownings, and homicides, 40% of fatal falls and suicides, and 50% of severe trauma injuries and sexual assaults [21], in the current study 52% of the sample were injured due to alcohol abuse.

Most of the study population consumes alcohol almost every day. A study conducted by Nubukpo P et al. showed results where 51% of the participants were heavy drinkers daily.

Conclusion

AUDIT is being used by the WHO and the European Union (EU) for the assessment of alcohol addiction patterns in populations of different countries. AUDIT tool has been an effective way of identifying the problematic alcohol consumption in the sample population and also identifying the stepwise patterns of disorder using different domains like hazardous consumption, alcohol dependence patterns and alcohol-related problems. While 25% of the study population consumed harmful quantities of alcohol up to 720ml a day, 67% admitted they were unable to be abstinent for at least a week and hence consumed alcohol continuously 62% were unable to work

continuously due to this disorder.48% needed the first drink in the morning every week, and 30% needed it almost daily. Such studies were very few in India and Telangana, this study also throws light into various patterns of alcohol consumption so that treatment can be planned effectively. More patient interaction and counselling are needed for treating alcohol use disorders, and regular use of AUDIT after treatment initiation can be effective in assessing patient outcomes.

Conflict of Interest

There was no conflict of interest in this study.

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References

[1]. Frings, D., & Albery, I. P., 2021, The Handbook of Alcohol Use: Understandings from Synapse to Society. *Academic*. https://link.springer.com/chapter/10.1007/978-3-031-18381-2_2

[2]. Baum, A., Revenson, T. A., & Singer, J., 2012, Handbook of health psychology. *Psychology press.* https://doi.org/10.4324/9780203804100

[3]. Becker, H. C., 2012, Effects of alcohol dependence and withdrawal on stress responsiveness and alcohol consumption. *Alcohol research: current reviews*, 34(4), 448. https://pubmed.ncbi.nlm.nih.gov/23584111/

[4]. Koob, G. F., & Le Moal, M., 2008, Addiction and the brain antireward system. *Annu. Rev. Psychol.,* 59(1), 29-53. https://doi.org/10.1146/annurev.psych.59.103006.093548

[5]. Anker, J. J., & Kushner, M. G., 2019, Co-occurring alcohol use disorder and anxiety: bridging psychiatric, psychological, and neurobiological perspectives. *Alcohol research: current reviews*, 40(1). https://doi.org/10.35946/arcr.v40.1.03

[6]. Vahia, V. N., 2013, Diagnostic and statistical manual of mental disorders 5: A quick glance. *Indian Journal of Psychiatry*, 55(3), 220-223. https://journals.lww.com/indianjpsychiatry

[7]. Gilbert, L., 2020, Alcohol: truth and consequences on campus: time to change college binge drinking culture once and for all. *JC & UL*, 45, 141. https://titleixforall.com/wp-content/uploads/2020/02/19.8.31_Gilbert-Copy

[8]. Parsons, A., 1996, Neuropsychology for clinical practice: Etiology, assessment, and treatment of common neurological disorders. Washington DC: *American Psychological Association*. https://psycnet.apa.org/record/1996-97886-000

[9]. Shield, K. D., Parry, C., & Rehm, J., 2014, Chronic diseases and conditions related to alcohol use. *Alcohol research: current reviews*, 35(2), 155. https://pmc.ncbi.nlm.nih.gov/articles/PMC3908707/

[10]. Ilhan, M. N., & Yapar, D., 2020, Alcohol consumption and alcohol policy. *Turkish Journal of Medical Sciences*, 50(5), 1197-1202. https://journals.tubitak.gov.tr/medical/vol50/iss5/1

[11]. World Health Organization. 2018, Global status report on alcohol and health 2018. *World Health Organization.* https://www.who.int/publications/i/item/9789241565639

[12]. Oscar-Berman, M., & Marinkovic, K., 2003, Alcoholism and the brain: an overview. *Alcohol Research & Health,* 27(2), 125. https://pmc.ncbi.nlm.nih.gov/articles/PMC6668884/

[13]. Oscar-Berman, M., & Marinković, K., 2007, Alcohol: effects on neurobehavioral functions and the brain. *Neuropsychology Review*, 17, 239-257. https://link.springer.com

[14]. Rastogi, A., Manthey, J., Wiemker, V., & Probst, C., 2022, Alcohol consumption in India: a systematic review and modelling study for sub-

national estimates of drinking patterns. *Addiction*, 117(7), 1871-1886. https://onlinelibrary.wiley.com

[15]. Lama, S. D., & Lodhi, M., 2023, Prevalence of Alcohol use among the Indian Population and its Impact on Public Health. *Indian Journal of Public Health Research & Development*, 14(3).

[16]. Balasubramani, K., Paulson, W., Chellappan, S., Ramachandran, R., Behera, S. K., & Balabaskaran Nina, P., 2021, Epidemiology, hot spots, and sociodemographic risk factors of alcohol consumption in Indian men and women: analysis of National Family Health Survey-4 (2015-16), a nationally representative cross-sectional study. *Frontiers in Public Health*, 9, 617311. https://www.frontiersin.org

[17]. Saunders, J. B., Aasland, O. G., Babor, T. F., De la Fuente, J. R., & Grant, M., 1993, Development of the alcohol use disorders identification test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption-II. *Addiction*, 88(6), 791-804. https://onlinelibrary.wiley.com

[18]. Lima, C. T., Freire, A. C. C., Silva, A. P. B., Teixeira, R. M., Farrell, M., & Prince, M., 2005, Concurrent and construct validity of the AUDIT in an urban Brazilian sample. *Alcohol and Alcoholism,* 40(6), 584-589. https://academic.oup.com

[19]. Babor, T. F., Higgins-Biddle, J. C., Saunders, J. B., Monteiro, M. G., & World Health Organization, 2001, AUDIT: the alcohol use disorders identification test: guidelines for use in primary health care (No. WHO/MSD/MSB/01.6 a). *World Health Organization*.

[20]. Shevlin, M., & Smith, G. W., 2007, The factor structure and concurrent validity of the alcohol use disorder identification test based on a nationally representative UK sample. *Alcohol & Alcoholism,* 42(6), 582-587.

[21]. Karaye, I. M., Maleki, N., Hassan, N., & Yunusa, I., 2023, Trends in alcohol-related deaths by sex in the US, 1999-2020. *JAMA Network Open*, 6(7), e2326346-e2326346. https://jamanetwork.com

[22]. Nubukpo, P., Girard, M., Sengelen, J. M., Bonnefond, S., Varnoux, A., Marin, B., & Malauzat, D., 2016, A prospective hospital study of alcohol use disorders, comorbid psychiatric conditions and withdrawal prognosis. *Annals of General Psychiatry*, 15, 1-11.

[23]. Abuse, S., 2019, Mental Health Services Administration. Results from the 2018 national survey on drug use and health: detailed tables. Book Results from the 2007 *National Survey on Drug Use and Health: Detailed Tables.*

[24]. McCarthy, M., 2015., Six people in US die each day from alcohol poisoning, *CDC reports*.

[25]. World Health Organization. 2019, Status report on alcohol consumption, harm and policy responses in 30 European countries 2019 (No. WHO/EURO: 2019-3545-43304-60696). *World Health Organization. Regional Office for Europe.*

[26]. Crozier, M. E., Farokhnia, M., Persky, S., Leggio, L., & Curtis, B., 2023, Relationship between self-stigma about alcohol dependence and severity of alcohol drinking and craving. *BMJ Ment Health*, *26*(1). https://mentalhealth.bmj.com

[27]. Slater, M. E., & Alpert, H. R., National Institute on Alcohol Abuse and Alcoholism (NIAAA) Surveillance Report# 120.

[28]. Cantor, J. H., Whaley, C. M., Stein, B. D., & Powell, D., 2022, Analysis of substance use disorder treatment admissions in the US by sex and race and ethnicity before and during the COVID-19 pandemic. *JAMA Network Open*, *5*(9), e2232795-e2232795.doi:10.1001/jamanetworkopen.2022.32795.