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## Review

# Alcoholic liver cirrhosis, more than a simple hepatic disease – A brief review of the risk factors associated with alcohol abuse

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### Abstract

Liver cirrhosis is a significant public health problem, being an important cause of mortality and morbidity, responsible for approximately 1.8% of the total number of deaths in Europe. Chronic alcohol consumption is the most common cause of liver cirrhosis in developed countries. Europe has the highest level of alcohol consumption among all the global World Health Organisation (WHO) regions. In this paper, we briefly review major factors leading to excessive alcohol consumption in order to draw attention to the fact that alcoholic liver cirrhosis is more than a simple liver disease, and if those risk/causal factors can be prevented, the incidence of this disease could be reduced greatly.

Although excessive alcohol consumption is regarded as the cause of alcoholic liver cirrhosis, the etiology is complex, involving multiple factors that act in synchrony, and which, if prevented, could greatly reduce the incidence of this disease. Children of addicts are likely to develop an alcohol-related mental disorder; however, there is no “gene for alcoholism”.

### Keywords

: liver cirrhosis, alcohol abuse, social, environmental and inherited risk factors

### Highlights

- ✓ Media exposure contributes to the influence on social alcoholic norms. Advertisements for alcoholic products mainly affects the young population, thus increasing their alcohol consumption.
- ✓ Alcohol may be used as a coping mechanism for stressful and traumatic situations.

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## Introduction

Chronic alcohol consumption and related liver diseases are the common causes of liver cirrhosis in most developed countries. Abusive alcohol consumption results from a variety of factors that differ across individuals but that may augment one another.

Liver cirrhosis is the final stage in the progression of chronic hepatic disease, that is morphologically defined as a pathologically diffused process that affects the structure and the architecture of the liver through fibrosis and nodular transformation, which ultimately leads to hepatic failure. Liver cirrhosis represents a significant public health problem, being a significant cause of mortality and morbidity. Its prevalence among the general population is difficult to specify as it is affected by modifiable risk factors such as chronic alcohol consumption, chronic viral hepatitis, and being overweight. In 2010, liver cirrhosis was the 23rd cause of death worldwide, accounting for 31 million deaths (1, 2). The World Health Organization (WHO) shows that 1.8% of the deaths in Europe (about 700,000 people) occur due to liver cirrhosis.

The primary etiology of liver cirrhosis is twofold: chronic alcohol consumption and chronic viral hepatitis (3, 4). Chronic alcohol consumption is a common cause of liver cirrhosis in most developed countries. Europe has the highest level of alcohol consumption of all the global WHO regions (5).

## Discussions

### *The concern related to chronic alcohol consumption*

Alcohol, in its various forms, concentrations, flavors, but with the same type of effects, is the most widely used drug in the world, having the advantage of legality and, in particular, of unconditional acceptance by most societies. The effects of alcohol (tonic, sedative, aphrodisiac) have been known for thousands of years, and the relationship with liver disease for over 200 years.

The excessive consumption of alcohol is responsible for 3.3 million deaths signifying roughly 6% of all global deaths (6). In 2015, in the USA, 47% of liver disease deaths were due to chronic alcohol consumption (7), and of all cirrhotic deaths in 2013, 47.9 % were alcohol-related (8). In Europe, 41% of liver-related deaths are due to alcohol-induced hepatic disease, Romania being the country with the highest such death rate in Europe, most of which are alcohol-related.

The amount of alcohol considered dangerous, risky, or problematic has not been clearly defined. According to some reports, it is at a level of 12g/day. For practical reasons, the consumption of fewer than two servings of

alcohol (each portion of about 10 grams of pure alcohol) per day for women and three servings for men is considered the safety limit. Consumption above this level is considered harmful (24).

### *Abusive alcohol consumption - causes, risk factors*

Identifying the cause that leads to the occurrence of abusive alcohol consumption is difficult. No single set of circumstances or factors is responsible, but rather a variety of factors that differ across individuals appear to act together. It is clear, however, that any person is susceptible to alcohol abuse independent of age, gender, ethnicity, body type, and personal beliefs; nevertheless, predicting abusive alcohol consumption is challenging. Furthermore, for some individuals, the manifestations develop rapidly and aggressively (9), while for others it may take years for the signs to appear.

### *I. Biological factors*

Research on alcohol consumption and dependence indicates that genetic factors play a role in developing alcoholism and account for approximately half of the risk for alcohol use disorder. Several genes associated with alcohol dependence (ADH1B and ALDH2) can be transferred from generation to generation, thus making children of addicts more likely to develop an alcohol-related mental disorder (10).

Family history of chronic alcohol consumption is not sufficient to demonstrate that genetic factors contribute solely to alcohol use disorder in offspring; however, adoption studies show that alcoholism in adopted children correlates more strongly with the biological parents than with adoptive parents. However, it should be stressed that, while genetic differences affect the risk, there is no "gene for alcoholism," and environmental and social factors weigh heavily in the development of alcoholism (11).

### *II. Psychological factors*

The human psyche is characterized by diversity in the capacity to cope and adapt to stressful and traumatic situations (12, 13). Alcohol often serves as a means of escape, providing a source of temporary relief. Common psychiatric disorders associated with alcohol abuse are anxiety disorders, depression, bipolar disorder, and schizophrenia. Alcohol, in turn, leads to the occurrence of clinical manifestations that mimic psychiatric disorders, thus creating a vicious cycle (14).

### *III. Social factors*

Alcohol consumption varies according to gender, ethnicity, social, and cultural environment. Throughout the world, men consume more alcohol than women, whereas

women in more developed countries consume more alcohol than women in developing countries. Among racial and ethnic groups, Caucasians report the highest use of alcohol among those 12 or older (7).

At the population level, research has documented the relationship between social determinants and health, in particular, alcohol consumption epidemiology, a social capital theory suggesting that social networks and connections influence health. In the context of alcohol consumption, individuals are located in the microsystem (their home, work environment, and school environment), which is also included in the wider community. Macroeconomic factors, such as exposure to advertising, can influence attitudes and norms of family and colleagues, ultimately affecting individual attitudes and behaviors (15).

### *III. A. Advertising, marketing and social media*

Media exposure influences social norms about alcohol through advertising, product placements, and stories from a wide range of sources, including films, television, social networks, and other forms of entertainment. Although alcohol sales and marketing are highly regulated, people are exposed to a wide variety of alcohol and alcoholic beverages through the media.

The alcohol industry uses targeted, sophisticated marketing strategies that focus on different demographic groups, such as youth, gender, ethnic minorities, and socio-cultural groups, strategies that can lead to the development of positive beliefs about alcohol consumption and the creation and expansion of environments where alcohol consumption is acceptable and encouraged (16, 17). Studies have found that advertisements for alcoholic products particularly affect the young population, thus increasing their alcohol consumption (16, 17).

Since the introduction of flavoured alcoholic beverages, the alcohol industry has been preoccupied with marketing techniques targeting young people in general, and young women, in particular, which has led to an increase in alcohol consumption in the female population. Although the alcohol industry claims that its marketing strategies target young adults who are at the legal age of drinking alcohol, products such as flavoured alcoholic drinks remain attractive to even younger people (18).

### *III. B. Discrimination*

Discrimination is seen as a critical social stressor that can have life-threatening effects, including increased alcohol consumption, which is used as a coping mechanism. Several studies have revealed a strong association between alcohol consumption and minorities

who are subject to racial discrimination: Asian, Hispanic, and African Americans (19).

Another group that may pose a particular risk to alcohol problems arising from their experiences of discrimination are those in the Lesbian, Gay, Bisexual, and Transgender (LGBT) community who face high levels of discrimination related to their sexual orientation and gender identification. More than two-thirds of the adult LGBT population face discrimination, and people who reported discrimination based on race, sex, and sexual orientation were almost four times more likely to use alcohol and other substances (20).

### *III. C. The community*

The research literature about community influences on alcohol consumption focuses on environmental issues such as where people live, their access to buying alcohol, and the support for drinking alcohol. Children living in an environment with easy access to alcohol and exposure to alcohol consumption by parents and neighbours are at increased risk for alcohol consumption disorder in adulthood. For example, living in a disadvantaged neighbourhood characterized by poor construction, inferior sewage system, and limited access to drinking water increases the risk of alcohol abuse compared to those who live in a better-constructed environment (21).

### *III. D. Cultural Norms*

Cultural norms and habits are potent predictors for both occasional and chronic alcohol abuse. In terms of race and ethnicity, African Americans and Latin Americans report more conservative attitudes towards alcohol consumption compared to white people. Asians have one of the lowest rates of alcohol consumption compared to other racial groups, especially when they accept and respect their ethnic identity. Ethnic identity can promote stronger family and traditional values, which are associated with lower alcohol consumption (15).

### *III. E. Family and peers' influence*

Among the strongest influences on young people's drinking behaviour are the people within their family and peer network. Adolescents from families where parents are accustomed to consuming high amounts of alcohol have a much higher risk of alcohol abuse. However, the influence of the family on the alcohol consumption of teens diminishes with time, with increasing influence of various social groups, including college/ faculty, work, friends, etc. (22, 23). Young people who are closely attached to their families, who share the family's negative attitudes towards alcohol consumption, and who have strong parental monitoring are less susceptible to drinking high amounts of alcohol.

## Conclusions

Although excessive alcohol consumption is regarded as the cause of alcoholic liver cirrhosis, the etiology is complex, involving multiple factors that act in synchrony, and which, if prevented, could greatly reduce the incidence of this disease.

Minorities who are subject to discrimination (racial, sexual orientation) and people living in disadvantaged neighborhoods are at significant risk of developing alcohol use disorders. Descendants of families where parents are accustomed to consuming high amounts of alcohol have the highest risk of alcohol abuse.

## Conflict of interest disclosure

There are no known conflicts of interest in the publication of this article. The manuscript was read and approved by all authors.

## Compliance with ethical standards

Any aspect of the work covered in this manuscript has been conducted with the ethical approval of all relevant bodies and that such approvals are acknowledged within the manuscript.

## References

- Murray CJ, Vos T, Lozano R. et al. Disability-adjusted life years (D.A.L.Y.s) for 291 diseases and injuries in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet*. 2012; 380(9859): 2197–2223.
- Suceveanu AI, Mazilu L, Tomescu D, Ciufu N, Parepa IR, Suceveanu AP. Screening of Hepatopulmonary Syndrome (H.P.S.) with C.E.U.S. and Pulse-Oximetry in Liver Cirrhosis Patients Eligible for Liver Transplant. *Chirurgia*. 2013; 108(5): 684–688.
- Gheorge L, Csiki IV, Icob S, Gheorghe C, Trifan A, Grigorescu M, Motoc A, Suceveanu A, Curascu M, Caruntu F, Sporea I, Brisc C, Rogoveanu I, Cerban R, Tugui L, Alexandrescu A. Hepatitis Delta Virus Infection in Romania: Prevalence and Risk Factors. *J Gastrointestin Liver Dis*. 2015; 24(4): 413–421.
- Leblebicioglu H, Arama V, Causse X, Marcellin P, Ozaras R, Postawa-Klozinska B, Simon K, Suceveanu AI, Wiese M, Zeuzem S, Klauck I, Morais E, Bjork S, Lescrauwaet B, Kamar D, Zarski JP. The AI463-121 European Longitudinal Chronic Hepatitis B Study Group. Predictors associated with treatment initiation and switch in a real-world chronic hepatitis B population from five European countries. *J Viral Hepat*. 2014; 21(9): 662–70.
- European association for the study of the liver. Prospects for liver disease in the E.U. [http://www.easl.eu/medias/EASLing/News/EASL\\_HEPAMAP\\_Full\\_Report.pdf](http://www.easl.eu/medias/EASLing/News/EASL_HEPAMAP_Full_Report.pdf). Accessed in May 2019
- World Health Organization (WHO). *Global Status Report on Alcohol and Health*. p. XIV. 2014 ed.
- [http://www.who.int/substance\\_abuse/publication\\_s/global\\_alcohol\\_report/msb\\_gsr\\_2014\\_1.pdf?ua=1](http://www.who.int/substance_abuse/publication_s/global_alcohol_report/msb_gsr_2014_1.pdf?ua=1). Accessed on May 2019.
- National Institutes on Alcohol Abuse and Alcoholism (N.I.A.A.). Alcohol Facts and Statistics. <https://www.niaaa.nih.gov>
- Yoon YH, Chen CM. Surveillance Report #105: Liver Cirrhosis Mortality in the United States: National, State, and Regional Trends, 2000–2013. Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism (NIAAA), 2016. Available at: <http://pubs.niaaa.nih.gov/publications/Surveillance/e105/Cirr13.pd>. Accessed on April 2019.
- Diaconu CC, Dediu GN, Iancu MA. Drug-induced arterial hypertension, a frequently ignored cause of secondary hypertension: a review. *Acta Cardiologica*. 2018; 73(6): 511–517.
- Edenberg HJ, Foroud T. Genetics and alcoholism. *Nat Rev Gastroenterol Hepatol*. 2013; 10(8): 487–494.
- Bohman M, Sigvardsson S, Cloninger CR. Maternal inheritance of alcohol abuse. Cross-fostering analysis of adopted women. *Arch Gen Psychiatry*. 1981; 38(9): 965–9.
- Diaconu C, Bălăceanu A, Costache C. Prevalence of hypoxic hepatitis in heart failure patients. *Journal of Hepatology* 2014; 60(Supplement 1): S515–S515.
- Diaconu CC, Arsene D, Paraschiv B, Bălăceanu A, Bartoș D. Hyponatremic encephalopathy as the initial sign of neuroendocrine small cell carcinoma - case report. *Acta Endocrinologica* 2013; IX(4): 637–642.
- Shivani R, Goldsmith RJ, M.D., Anthenelli RM. Alcoholism and Psychiatric Disorders, Diagnostic Challenges. *Alcohol Research & Health*. 2002; 26(2): 90–98.
- Sudhinaraset M, Wigglesworth C, Takeuchi DT. Social and Cultural Contexts of Alcohol Use: Influences in a Social-Ecological Framework. *Alcohol Res*. 2016; 38(1): 35–45.
- Grenard JL, Dent CW, Stacy AW. Exposure to alcohol advertisements and teenage alcohol-related problems. *Pediatrics*. 2013; 131(2): e369–79.

18. Alaniz ML, Wilkes C. Pro-drinking messages and message environments for young adults: the case of alcohol industry advertising in African American, Latino, and Native American communities. *J Public Health Policy*. 1998; 19(4): 447-72.
19. Mosher JF, Johnsson DJ. Flavored alcoholic beverages: an international marketing campaign that targets youth. *Public Health Policy*. 2005; 26(3): 326-42.
20. Chae DH, Takeuchi DT, Barbeau EM, Bennett GG, Lindsey JC, Stoddard AM, Krieger N. Alcohol disorders among Asian Americans: associations with unfair treatment, racial/ethnic discrimination, and ethnic identification (the national Latino and Asian Americans study, 2002-2003). *J Epidemiol Community Health*. 2008; 62(11): 973-9.
21. McCabe SE, Bostwick WB, Hughes TL, West BT, Boyd CJ. The relationship between discrimination and substance use disorders among lesbian, gay, and bisexual adults in the United States. *Am J Public Health*. 2010; 100(10): 1946-52.
22. Bernstein KT, Galea S, Ahern J, Tracy M, Vlahov D. The built environment and alcohol consumption in urban neighborhoods. *Drug Alcohol Depend*. 2007; 91(2-3): 244-52.
23. Anca Trifan et al. Gastroenterologie si hepatologie clinica. Editura Medicala, Bucuresti 2018.
24. Cruz JE, Emery RE, Turkheimer E. Peer network drinking predicts increased alcohol use from adolescence to early adulthood after controlling for genetic and shared environmental selection. *Dev Psychol*. 2012; 48(5): 1390-402.
25. Dawson DA. The link between family history and early onset alcoholism: earlier initiation of drinking or more rapid development of dependence? *J Stud Alcohol*. 2000; 61(5): 637-46.