

## Drinking and Liver Disease

### TERMS AND CONCEPTS

**Alcohol-related liver disease** (also called alcoholic liver disease) is an umbrella term used to identify three liver conditions associated with heavy drinking: alcoholic fatty liver disease, alcoholic hepatitis, and alcoholic cirrhosis.

**Morbidity** is a measure of disease in a particular population.

**Mortality** is a measure of death in a given population.

### BACKGROUND

#### *Liver Disease in Context*

There are over 100 types of liver disease, many of which are quite rare. This review will focus on alcohol-related liver diseases (also called alcoholic liver disease), a term used to identify three liver conditions associated with heavy drinking [1, 2].

- **Alcoholic fatty liver disease** is characterized by a buildup of fatty tissue in the liver, and is generally reversible if alcohol consumption ceases.
- **Alcoholic hepatitis** involves inflammation and mild scarring of the liver. Damage caused by this form of hepatitis is also potentially reversible.
- **Alcoholic cirrhosis**, in which normal liver tissue is replaced by extensive scar tissue, is the most serious form of alcohol-related liver disease.

Most heavy drinkers progress through the diseases starting with alcohol fatty liver disease, then alcoholic hepatitis, and ending with alcoholic cirrhosis; however, some alcoholics may bypass alcoholic hepatitis [1].

**This IARD Health Review aims to summarize the current literature surrounding the relationship between heavy alcohol consumption and alcohol-related liver disease.**

### SUMMARY OF THE LITERATURE

#### *Drinking patterns and risk*

**Alcohol-related liver disease is linked to the pattern of alcohol consumption [2, 3].**

- Between 90% and 100% of heavy drinkers develop fatty liver disease.
- Between 10% and 35% of heavy drinkers develop alcoholic hepatitis.
- Between 8% and 20% of heavy drinkers develop alcoholic cirrhosis.

**An association has also been seen between heavier drinking levels and liver cancer.** For more information, see the [IARD Health Review: Drinking and Cancer](#).

## SUMMARY OF THE LITERATURE (CONT.)

### **A definitive threshold below which alcohol intake will not cause liver disease has not been established [4].**

- However, research suggests that levels of around 20 to 30 g / day for men and 10 to 15 g / day for women are unlikely to cause liver disease in most individuals [4].
- Some studies indicate that not only the quantity of alcohol consumed, but also the frequency of drinking, influences the risk of liver disease [5, 6].

### **Alcoholic cirrhosis is thought to be the result of at least a decade of sustained heavy drinking [4, 7].**

While moderate drinking is not linked with developing liver cirrhosis [8], in some individuals it may accelerate the progression of cirrhosis where there is underlying liver damage from hepatitis [9-11].

### **Alcohol consumption is more clearly linked with mortality from cirrhosis, than with morbidity [8].**

- In 2010, 47.9% of cirrhosis deaths worldwide were attributable to alcohol consumption [12]; however, the alcohol-attributable share relative to the contributions of hepatitis B and C can vary considerably [13].

### **Liver damage related to alcohol consumption may be reversible. In some cases, ceasing alcohol consumption can restore liver health and improve response to medical treatment [14].**

- Even in persons with advanced alcohol-related liver disease, abstaining from alcohol can improve the functioning of the liver and enhance life expectancy [15, 16].
- Eliminating or reducing alcohol intake can also improve the health of patients suffering from liver disease that is unrelated to alcohol consumption in its etiology (e.g., chronic hepatitis infection) [10].

### **Demographic factors and risk**

Women are more susceptible to the effects of alcohol and may be at risk for liver disease at lower levels of alcohol consumption than men [17-19].

Ethnicity is also a factor in susceptibility to liver disease.

- Research from the U.S. has reported that liver disease develops earlier in life among Hispanics than among Whites/Caucasians [20], while the highest ages for developing liver disease have been reported among African Americans [21].

- A U.K. study similarly found differences among ethnic groups and the development of liver cirrhosis [22].
- Genetic, social, and cultural factors, as well as drinking patterns, have all been suggested to play a role in ethnic differences observed in the manifestation of, and outcomes associated with, cirrhosis [20, 21].

### **Other factors and risk**

#### **Liver health is also affected by obesity, infection, and other health conditions.**

- Obesity is an independent risk factor for liver disease [23].
- Chronic hepatitis B and C are responsible for a significant proportion of liver cirrhosis globally, although this proportion varies by geographic region [13].

The presence of multiple risk factors may increase the risk for and progression of liver disease [24, 25]. Moreover, the joint effect of alcohol consumption and hepatitis C appears to be greater than the sum of the individual effects [14].

#### **The effects of alcohol consumption on liver health may also be complicated by environmental factors.**

#### **As the liver plays a vital role in breaking down substances entering the body, certain pharmaceutical products and other complex chemical compounds may worsen the impact of heavy drinking on liver health.**

- Medications, such as some pain relievers (e.g., acetaminophen/paracetamol), can be damaging to the liver, especially when used in conjunction with alcohol [14, 26], and lead to liver scarring.
- Some research indicates that certain home-produced spirits contain higher concentrations of compounds that may increase the risk of liver damage [27].

## METHODOLOGICAL CONSIDERATIONS

When interpreting research findings on risk factors and associated health outcomes, a number of methodological issues should be taken into consideration.

### ***Misclassification of disease***

The misclassification of disease in health statistics has been identified as a potential problem in correctly estimating both prevalence and mortality rates.

- Diagnosis of alcohol-related liver disease is partly based on a patient's established history of heavy drinking.
- A margin of misclassification is possible in identifying the proportion of all liver disease attributable to alcohol.

### ***Underreporting***

The underreporting of drinking is a central concern of alcohol-related research. It is well established that survey respondents often underestimate their alcohol consumption. The magnitude of underreporting varies by respondent, context, and the approach used to measure consumption.

### ***Misclassification of drinkers***

Studies suggest that the underreporting of consumption can result in the misclassification of drinkers, especially between the low and moderate consumption categories. This misclassification can make it difficult to establish a clear relationship between low or moderate alcohol intake and disease outcomes. This, in turn, makes it difficult to identify definitive thresholds at which alcohol consumption increases the risk for specific diseases.

## CONCLUDING REMARKS

Alcohol-related liver disease is positively associated with heavy alcohol consumption. In some cases, ceasing alcohol consumption can restore liver health and improve response to medical treatment.

The relationship between heavy alcohol consumption and liver damage may be complicated by various demographic and lifestyle factors, including gender, ethnicity, obesity,

and health illnesses, all of which may increase risk for liver disease. Additionally, certain medications may influence the effects of alcohol consumption on liver health.

Future research could determine a definitive threshold for which alcohol intake causes liver disease.

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# Reviews

*IARD Health & Policy Reviews* cover the effects of alcohol consumption on health. They offer an overview of the relationship between drinking patterns and health outcomes, compile the key literature, and provide the reader with an extensive bibliography that refers to original research on each topic. The *Reviews* attempt to present the balance of the available evidence. They do not necessarily reflect the views of IARD or its sponsoring companies.

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The International Alliance for  
Responsible Drinking (IARD)  
The Jefferson Building  
1225 19th Street NW, Suite 500  
Washington, DC 20036

**IARD**  
INTERNATIONAL ALLIANCE FOR  
RESPONSIBLE DRINKING  
action on alcohol and global health

Phone: 1.202.986.1159  
Fax: 1.202.986.2080  
Email: [info@iard.org](mailto:info@iard.org)  
Web: [www.iard.org](http://www.iard.org)