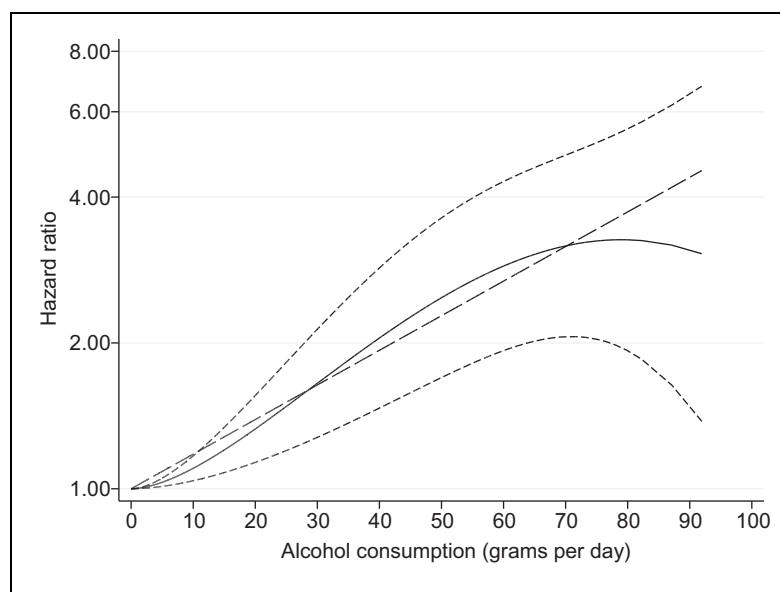


Alcohol consumption in late adolescence is associated with an increased risk of severe liver disease later in life

Graphical abstract



Highlights

- Alcohol consumption early in life was associated with an increased risk for development of severe liver disease after 39 years of follow-up.
- The risk increased in a dose-response pattern, with no evidence of a threshold effect.
- Trend towards an increased risk of severe liver disease in men consuming less than current recommendations for a safe alcohol intake.

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Lay summary

We investigated more than 43,000 Swedish men in their late teens enlisted for conscription in 1969–1970. After almost 40 years of follow-up, we found that alcohol consumption was a significant risk factor for developing severe liver disease, independent of confounders. This risk was dose-dependent, and was most pronounced in men consuming two drinks per day or more.

Alcohol consumption in late adolescence is associated with an increased risk of severe liver disease later in life

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Background & Aims: High alcohol consumption is associated with an increased risk of severe liver disease. Current recommendations suggest it is safe for men to consume 30 grams of alcohol per day. We investigated the association between alcohol consumption early in life and later development of severe liver disease.

Methods: We used data on alcohol consumption at conscription to military service from 43,296 men (18–20 years) in Sweden between 1969 and 1970. Outcomes were defined as incident diagnoses of severe liver disease from systematic national registration of clinical events until the end of 2009. A Cox regression model adjusted for body mass index, smoking, use of narcotics, cognitive ability and cardiovascular capacity was applied.

Results: During a mean follow-up of 37.8 years, 383 men developed severe liver disease. Alcohol consumption was associated with an increased risk of development of severe liver disease in a dose-response pattern (adjusted hazard ratio for every one gram/day increase 1.02; 95% CI 1.01–1.02). No evidence of a threshold effect was found. Importantly, a clear trend pointed towards an increased risk of severe liver disease in men who consumed less than 30 grams of alcohol per day.

Conclusion: Alcohol consumption in young men is associated with an increased risk of severe liver disease, up to 39 years later in life. The risk was dose-dependent, with no sign of a threshold effect. Current guidelines for safe alcohol intake in men might have to be revised.

Lay summary: We investigated more than 43,000 Swedish men in their late teens enlisted for conscription in 1969–1970. After almost 40 years of follow-up, we found that alcohol consumption was a significant risk factor for developing severe liver disease, independent of confounders. This risk was dose-dependent, and was most pronounced in men consuming two drinks per day or more.

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Introduction

Alcohol consumption is a known risk factor for the development of cirrhosis.^{1,2} Alcohol has been reported to account for 85,000 deaths per year in the US³ and as many as 50% of all deaths from liver cirrhosis on a global scale.⁴ The exact amount of alcohol needed to inflict liver damage is unclear and is affected by internal factors including genetics⁵ and external factors including drinking patterns, type of alcohol and diet.⁶ Some evidence points to a cut-off around 30 grams of pure alcohol per day for men and 20 grams per day for women,^{1,6–8} although data from two meta-analyses indicate that the cut-off might be lower at 20–25 grams per day.^{9,10} This uncertainty is noted in guidelines for alcoholic liver disease.^{11,12}

Much of the current evidence on the risk of liver disease progression attributable to alcohol comes from studies with selected populations, short follow-up periods or from cross-sectional or case-control studies, where cases with manifest liver disease might be prone to under report past alcohol consumption, leading to misclassification bias. Thus, the role of alcohol consumption early in life needs to be investigated in studies where alcohol consumption is measured before liver disease has developed, with adequate follow-up and data on possible confounders.

We examined if alcohol consumption in late adolescence in a population of well-characterized adolescent men was associated with an increased risk of severe liver disease later in life, and if a cut-off level could be identified.

Material and methods

Study population

We used data from a nationwide population-based study conducted during 1969–1970 of all Swedish men compulsorily enlisted for conscription. During that time, conscription was mandatory in Sweden, and only 2–3% of men were exempted from conscription, mostly due to severe disabilities or diseases. This study was based on 49,321 Swedish men, age 18–20, conscripted during that period.

Variables

Baseline

All conscripts underwent an extensive health examination with height and weight measurements, and personal interviews.



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