Increased Hospital Admission Rates From Alcohol Related Liver Disease Did Not Impact Mortality During the COVID Pandemic

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INTRODUCTION

- Alcohol related liver disease (ALD) is associated with high mortality, accounting for 48% of cirrhosis-related deaths in the US
- Excessive alcohol intake rose 21% since the start of the COVID pandemic
- Our study aims to compare pre-COVID to pandemic hospitalization and mortality rates to assess the burden of COVID on ALD

METHODS

- Retrospective, IRB approved, study of patients admitted for ALD from January 2019-December 2021 at our institution
- ALD included diagnoses of alcohol cirrhosis, alcohol hepatitis, alcohol fatty liver disease, and acute on chronic liver failure due to alcohol
- Study dates:
  - **Pre-COVID**: January 2019-February 2020
  - **Pandemic**: March 2020-December 2021
- 30-day mortality was defined as death date 30 days or less from admission
- The change in ALD admissions through time was analyzed with a local polynomial regression smoothing function plot comparing the average number of monthly pre-COVID ALD admissions to each monthly number of pandemic ALD admissions, and the differences were compared using t-test
- Univariate and multivariate analysis with Cox proportional hazards regression model was performed
- Pre-COVID and pandemic 30-day mortality rates were compared with Kaplan-Meier survival curve, using a 95% confidence interval
- R (version 3.6.2; Vienna, Austria) was used for analyses and p-value <0.05 was considered statistically significant

RESULTS

- There were 688 ALD admissions, 249 pre-COVID and 439 pandemic
- Pre-COVID and pandemic patients were similar with males (62% vs 61%), average age (56 vs 55), prior diagnosis of cirrhosis (37% vs 33%, p=0.41) and/or alcohol hepatitis (70% vs 65%, p=0.29), respectively
- The average number of monthly ALD admissions pre-COVID was 18
- During the pandemic, the number of monthly ALD admissions:
  - first increased to 23 (range 20-26) after restrictions were first enforced, from May-September 2020
  - then increased again to 26 (range 20-35) after Omicron restrictions were re-enforced, from December 2020-August 2021 (**Table 1**)
- 30-day mortality rate between pre-COVID and the pandemic was not significantly different by univariate (HR 1.21, CI 0.67-1.88, p=0.67) or multivariate analysis (HR 1.54, CI 0.90-2.64, p=0.11) (**Figure 1**)

Table 1. Number of ALD admissions and the comparison to Pre-COVID

	Time	Number of ALD admissions	P-value
	2020MAR	10	**<0.001**
	2020APR	11	**<0.001**
Restrictions first enforced	2020MAY	24	**<0.001**
	2020JUN	20	**0.02**
	2020JUL	20	**0.02**
	2020AUG	19	0.169
	2020SEP	26	**<0.001**
	2020OCT	16	0.052
	2020NOV	18	0.801
	2020DEC	25	**<0.001**
	2021JAN	14	**0.001**
	2021FEB	20	**0.02**
Omicron restrictions enforced	2021MAR	13	**<0.001**
	2021APR	35	**<0.001**
	2021MAY	23	**<0.001**
	2021JUN	26	**<0.001**
	2021JUL	23	**<0.001**
	2021AUG	30	**<0.001**
	2021SEP	17	0.363
	2021OCT	23	**<0.001**
	2021NOV	17	0.363
	2021DEC	9	**<0.001**

Table 1. Number of monthly admissions for ALD during the Pandemic (March 2020 through December 2021)

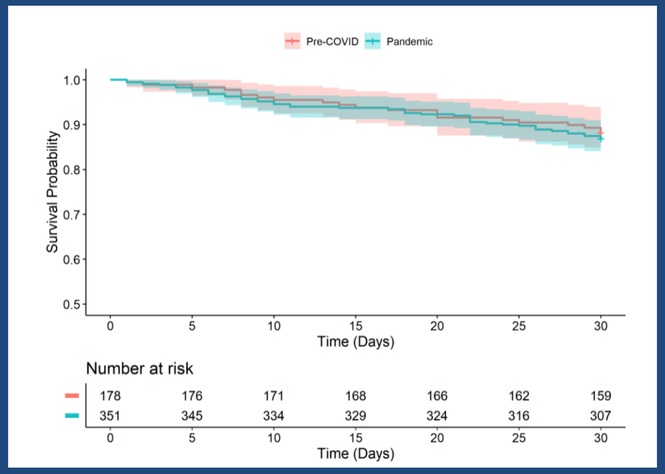

Figure 1. Kaplan-Meier curve showing 30-day mortality for ALD related admissions pre-COVID (red) compared to Pandemic (blue)

DISCUSSION

- The COVID pandemic saw an increase in excessive alcohol use in the US
- This study demonstrates a significant increase in the number of alcohol related liver disease admissions during the pandemic
- The increase in admissions were most notable following enforcement of public health restrictions
- Despite this increase in admissions, the 30-day mortality rate was not impacted

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