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Mortality Rate Among Patients with Alcohol Use Disorder with Two or More Readmissions to the Hospital

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Abstract

Background: Alcohol use disorder is associated with high morbidity and mortality rates, leading to a significant burden worldwide. Increased hazardous alcohol consumption has been reported during the COVID-19 pandemic raising concerns for greater impact of this already prevalent serious medical condition.

Methods: We conducted chart reviews and described demographic and clinical data for patients with two or more hospital readmissions from June 2020 to July 2021 and followed survival status through June 2022.

Results: We found a high mortality rate of 10.3%. Most patients had psychiatric conditions listed in the chart (n = 70, 80%). Only 34% (n = 24) of living patients and 6% (n = 1) of deceased patients were under psychiatric care. Rates of the utilization of medications for alcohol use disorder were low (n = 23, 26%).

Interpretation: We found high mortality rates in patients with two or more hospital readmissions with low rates of utilization of medications for alcohol use disorder and psychiatric care, thus identifying areas of potential improvement.

Keywords: Alcohol, Alcohol use disorder, Mortality, Hospital readmissions

1. Introduction

A lcohol use disorder (AUD) is a major global public health crisis. Excessive alcohol use contributed to more than 140,000 deaths in the United States annually between 2015 and 2019 (Centers for Disease Control and Prevention [CDC]. 2022). A study conducted in Sweden found that AUD was associated with an increased mortality risk with a hazard ratio of 5.83.

Hulme et al.² found that among patients with Emergency Department (ED) visits for alcoholrelated problems, mortality ranged from 4.7% for patients with two or more ED visits to 8.8% for patients with five or more visits within a year. Similarly, Myran et al.³ found that yearly mortality rates were 12.1% among men aged 45 to 59 with three or more ED visits for AUD treatment.

The COVID-19 pandemic has led to an increase in hazardous alcohol consumption, with a significant

increase in alcohol liver disease (ALD), liver injury caused by chronic excessive alcohol consumption, Chen et al.⁴ looked at the escalation-of-care referrals for ALD with recent alcohol consumption and showed a significant increase from 32% of referrals in 2019 to 48.7% in the second half of 2020. AUD-related mortality rates have also increased dramatically in the US since the beginning of the COVID-19 pandemic. Yee et al.⁵ compared observed vs. projected rates of AUD-related mortality and showed an increase of 24.79% in 2020 and 21.95% in 2021.

Given these concerning trends, there is a need to identify individuals at the highest risk of death from AUD and to develop intervention strategies. Here, we describe a sample of patients with a diagnosis of AUD and two or more readmissions to a medical or surgical floor in a rural US county to examine potential predictors of mortality and areas for improvement in the delivery of care.

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2. Methods

We conducted a retrospective chart review of a cohort of patients 18 years of age and older with an active diagnosis of AUD and two or more admissions to a medical or surgical floor, between July 1, 2020, to June 30, 2021, in a single community-based hospital in western Massachusetts. AUD was defined as a "medical condition characterized by an impaired ability to stop or control alcohol use despite adverse social, occupational, or health consequences" (National Institute on Alcohol Abuse and Alcoholism [NIHAA]. 2021) and documented in the electronic medical record (EMR) by an ICD-10 code of F10. Demographic and clinical data, including psychiatric and medical comorbidities (see Table 1), were abstracted from the last admission, and survival status, as documented in the EMR, was followed through June 2022. Data were abstracted by a single reviewer (OT) using a set of predefined variables.

3. Results

Eighty-seven patients met the inclusion criteria. The majority were male (n = 59, 67.8%), White (n = 84, 96.5%), mean (SD) age of 47.2 (13.0) years. Most subjects had at least one co-morbid psychiatric diagnosis listed in the chart (n = 70, 80%). The most common psychiatric diagnoses included unipolar depression (n = 47, 55%) and anxiety (n = 42, 48%). Approximately one quarter (n = 24, 27%) of all subjects had a history of a suicide attempt.

Seventeen patients (20%) died by June 2022. Demographic and clinical data by survival status are presented in Table 1. Nine patients (of 87) died

Table 1. Demographic and clinical information.

| | | N | Living (N = 70) | | Deceased (N = 17) | |
|----------------------------|---------------------------------------|----|-----------------|------|-------------------|------|
| | | | Mean/Number | SD/% | Mean/Number | SD/% |
| | #ED visits | 87 | 6.8 | 3.6 | 8.3 | 5.7 |
| Demographics | Age (years) | 87 | 45.3 | 12.9 | 55.3 | 10.5 |
| | Male | 59 | 49 | 70% | 10 | 59% |
| Race | Hispanic | 1 | 1 | 1% | 0 | 0% |
| | Black or African American | 2 | 2 | 3% | 0 | 0% |
| | White | 84 | 67 | 96% | 17 | 100% |
| | Other Race | 1 | 1 | 1% | 0 | 0% |
| Marital status | Married/partner | 6 | 5 | 7% | 1 | 6% |
| | Divorced/separated | 27 | 18 | 26% | 9 | 53% |
| | Single | 52 | 46 | 66% | 6 | 35% |
| | Widowed | 1 | 0 | 0% | 1 | 6% |
| | Other marital status | 1 | 1 | 1% | 0 | 0% |
| Employment status | Employed | 16 | 15 | 21% | 1 | 6% |
| | Unemployed | 59 | 48 | 69% | 11 | 65% |
| | Retired | 11 | 6 | 9% | 5 | 29% |
| | Disabled | 1 | 1 | 1% | 0 | 0% |
| Professional services | Primary Care Provider | 80 | 64 | 91% | 16 | 94% |
| | SUD Consult obtained* | 75 | 66 | 94% | 9 | 53% |
| | Psychiatric services | 25 | 24 | 34% | 1 | 6% |
| Psychiatric co-morbidities | Psychiatric diagnosis | 70 | 59 | 84% | 11 | 65% |
| | Psychiatric medications | 68 | 55 | 79% | 13 | 76% |
| | Psychiatric admissions | 36 | 36 | 51% | 2 | 12% |
| | Suicide attempts | 24 | 23 | 33% | 1 | 6% |
| SUD treatment | Involuntary substance use treatment** | 13 | 13 | 19% | 0 | 0% |
| | AUD medications | 23 | 18 | 26% | 5 | 29% |
| Other substance use | Smoking | 61 | 51 | 73% | 10 | 59% |
| | Cocaine | 15 | 14 | 20% | 1 | 6% |
| | Opioids | 16 | 13 | 19% | 3 | 18% |
| | IV opioids | 16 | 13 | 19% | 3 | 18% |
| | Methamphetamine | 1 | 1 | 1% | 0 | 0% |
| Medical co-morbidities | Heart disease | 16 | 13 | 19% | 3 | 18% |
| | Hypertension | 38 | 27 | 39% | 11 | 65% |
| | Diabetes | 9 | 6 | 9% | 3 | 18% |
| | Chronic kidney disease | 2 | 1 | 1% | 1 | 6% |
| | Cancer | 3 | 2 | 3% | 1 | 6% |
| | COPD | 7 | 2 | 3% | 5 | 29% |
| | Hepatitis C | 18 | 16 | 23% | 2 | 12% |

^{*}Substance Use Disorder Consult Liaison Services consultation during inpatient psychiatric admission.

^{**}As granted by Section 35 in Massachusetts.

between July 2020 and June 2021, and eight (of 78) died between July 2021 and June 2022, corresponding to a 10.3% annual mortality rate. Liver cirrhosis was documented in the chart for 76% (n=13) of patients who died and listed as a cause of death in 24% (n=4, Table 2). 92% (n=12) of patients with documented liver cirrhosis had at least one medication to address ALD listed in the chart. Ten patients died in the community and their cause of death was not known.

Characteristics among those who survived versus those who died were similar. The majority had a comorbid psychiatric diagnosis and were on psychiatric medications. Notably, less than a third of patients were prescribed FDA-approved medications for AUD (Table 1). Despite highly prevalent psychiatric comorbidities, only 34% (n = 24) of living patients and 6% (n = 1) of the deceased patients had psychiatric services in the community, as documented in the EMR.

4. Discussion

AUD is a highly prevalent condition associated with significant morbidity and mortality. Given the increased hazardous alcohol consumption during the COVID-19 pandemic,⁴⁻⁷ AUD represents a public health emergency. A prediction model by Barbosa et al.⁸ showed that health impacts and care costs associated with AUD will continue to increase markedly in the next five years.

In this report, we described a sample of patients with AUD with two or more inpatient medical admissions in a 12-month period. Consistent with the literature that showed yearly mortality in patients with AUD as high as 12%, 2,3 the current analysis shows high mortality rates among patients with AUD with recurrent admissions.

While based on a small sample, this study identified several areas of potential improvement in managing high-risk patients with AUD. This study showed that despite the availability of evidence-based psychopharmacological treatment for AUD, there is a gap in care with relatively low use of

Table 2. Complications of AUD and cause of death.

| | N | % of patients |
|----------------------|----|---------------|
| Complications of AUD | | |
| Liver cirrhosis | 13 | 76% |
| Wernicke's | 1 | 6% |
| Cause of death | | |
| Liver failure | 4 | 23% |
| Cardiac arrest | 1 | 5% |
| CVA | 1 | 5% |
| Sepsis | 1 | 5% |
| Not documented | 10 | 58% |

FDA-approved medications for AUD and utilization of psychiatric services.

High rates of psychiatric comorbidities and greater risk for suicidal behaviors in patients with substance use disorders are well described in the literature. 10,11 Indeed, our study showed low utilization of mental health services despite high rates of psychiatric comorbidities and past suicide attempts. Thus, identifying patients at the most risk and providing a timely referral to psychiatric services is crucial. Integrated approach to care was associated with better outcomes in patients with ALD.¹² Given that patients with substance use disorders have high rates of non-adherence to treatment, including appointments, 13 frequently missed proactive models of care with the involvement of case management are needed.

AUD is a chronic progressive disorder with devastating consequences to individual life, families, communities, and society. In light of the unfolding public health crisis worsened by the COVID-19 pandemic, a coordinated effort from the government and healthcare providers to shift current trends toward healing and recovery is urgently needed.

Conflict of interest

No financial disclosures or conflicts of interest.

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