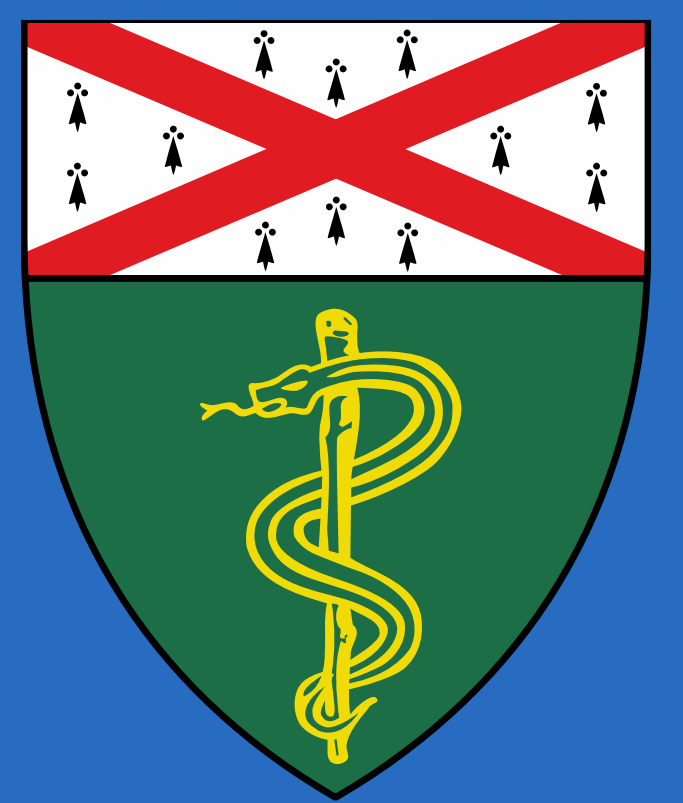


Frailty is associated with Worse Outcomes in Patients Hospitalized with Non-Alcoholic Steatohepatitis (NASH)



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Introduction

Frailty is an important predictor of morbidity and mortality in hospitalized patients. Concurrently, nonalcoholic steatohepatitis (NASH) is the most rapidly growing etiology for liver failure-related hospitalization and use of hospital resources. The Hospital Frailty Risk Score (HFRS) is a validated algorithmic score using International Classification of Diseases codes (ICD-10) for identification of frailty in hospitalized patients. We aimed to study the role of HFRS as a predictor of outcomes and healthcare resource utilization in patients with NASH.

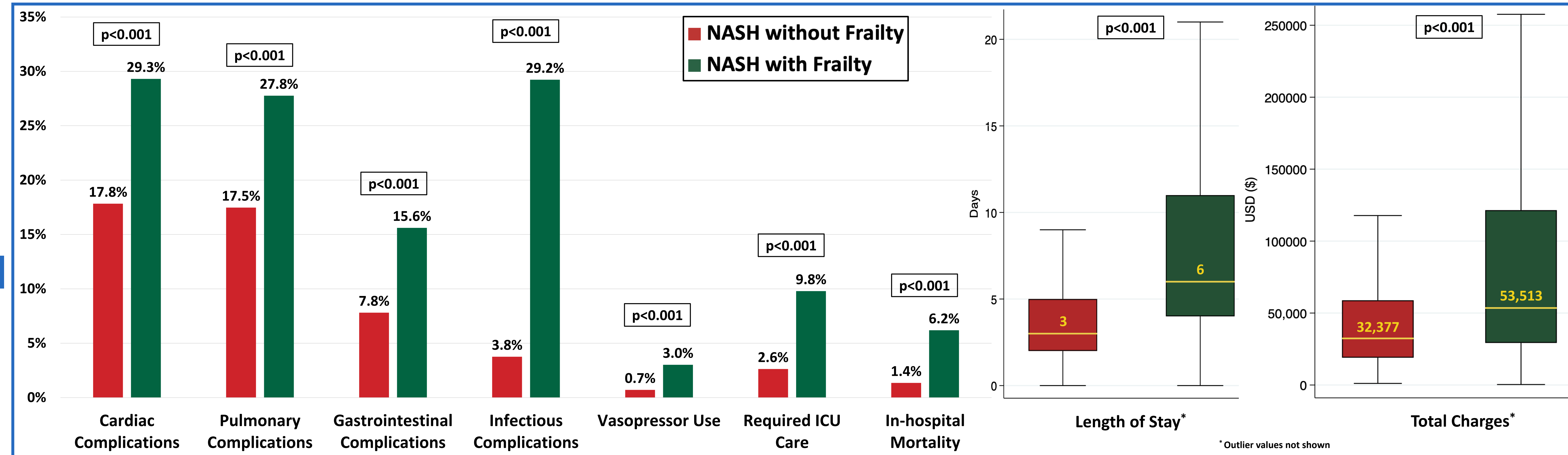
Methods

We performed a retrospective cohort study of hospitalized patients in the National Inpatient Sample (NIS) 2017 to 2019, with a primary discharge diagnosis of NASH. Based on HFRS, we classified patients into 2 groups: NASH with frailty (NASH+frailty, HFRS ≥ 5) or NASH without frailty (NASH-frail, HFRS < 5). Our primary outcomes were all-cause in-hospital mortality and hospitalization cost. Secondary outcomes included hospital complications and ICU admissions. We performed multivariable logistic regression for outcomes, and discharge-level weights were applied to provide national estimates.

Results

13,830 hospitalizations met inclusion criteria, of which 49.1% (6,790) were identified as NASH+frailty and 50.9% (7,040) as NASH-frailty. NASH+frailty had higher rates of in-hospital complications and healthcare resource utilization when compared to NASH-frailty.

Results



Variable	N=13,830		p-value
	NASH without Frailty n=7,040	NASH with Frailty n=6,790	
Female, %	59.80*	64.58*	0.011
Age (years), mean \pm SD	62.16 \pm 12.10*	64.61 \pm 11.10*	<0.001
Age ≥ 65 years, %	46.45*	52.80*	<0.001
Charlson Comorbidity Index, mean \pm SD	3.89 \pm 2.15*	5.23 \pm 2.30*	<0.001
Hospital Frailty Risk Score, mean \pm SD	2.36 \pm 1.54*	8.51 \pm 2.98*	<0.001

Table 1: Baseline Characteristics

* p<0.05

Outcome	Adjusted Odds Ratio* (FrailNASH vs NonFrailNASH)	95% CI	p-value
In-hospital mortality	4.66	[2.70 – 8.05]	<0.001
Length of stay (Days)	4.75 ^{&}	[3.72 – 5.58]	<0.001
Total charges (\$)	70,087 ^{&}	[50,882.42 – 89,292.91]	<0.001
Cardiac complications	1.32	[1.08 – 1.61]	0.006
Pulmonary complications	1.66	[1.35 – 2.04]	<0.001
Gastrointestinal complications	2.31	[1.75 – 3.04]	<0.001
Infectious complications	12.47	[9.10 – 17.08]	<0.001
Vasopressor use	4.74	[2.12 – 10.63]	<0.001
Required intensive care unit care	4.24	[2.86 – 6.28]	<0.001

Table 2: Multivariate Regression for the Outcomes

* Analysis adjusted for age, gender, race, hospital location and teaching status, insurance, median household income and Charlson co-morbidity index

& Adjusted co-efficient representing the average difference in this outcome between FrailNASH and NonFrailNASH

Conclusion

Frailty was independently associated with worse outcomes and higher health care utilization in patients with NASH, even after adjustment for age and comorbidity. NASH patients with frailty might benefit from more aggressive approach during hospitalization to prevent adverse outcomes.