

INTRODUCTION: Background

By 2030, congestive heart failure (CHF) is estimated to affect >8 million Americans and will cost the US health system over \$69.7 billion. Prior studies confirmed the correlation between higher liver stiffness values in CHF. However, no study has been done to investigate the prevalence of social determinants of health (SDOH) in CHF patients with different liver stiffness categories.

References

1. Heidenreich PA, Albert NM, Allen LA, Bluemke DA, Butler J, Fonarow GC, et al. Forecasting the impact of heart failure in the United States: a policy statement from the American Heart Association. *Circ Heart Fail.* 2013;6(3):606–619

Aim/Purpose/Objectives

Using a national level data, we aim to inform healthcare providers on the prevalence of SDOH variables in CHF patients with different liver stiffness categories and its effect on healthcare utilization cost.

METHODS: Interventions/Changes

We analyzed data from the National Health and Nutrition Examination Survey (NHANES) 2017–2020.

Data Analysis:

- **Data Source:** Participants with CHF, have completed LUTE examination, and free of primary liver diseases
- **Inclusion Criteria:** Liver fibrosis is predefined as LUTE values higher than 7.65 kPa and liver cirrhosis as LUTE values higher than 13.01 kPa.
- **Identification of SDOH:** Five domains of SDOH were identified: low education (LE), low income, (LI), no health insurance (NI), food insecurity (FI), and no/limited employment (NE).

METHODS: Measures/Metrics

We performed descriptive analyses, examined the prevalence of each SDOH, and analyzed SDOH effect on healthcare utilization.

- IRB Submission
- Not needed.

RESULTS

- We analyzed 341 individual data consisting of 199 (58.4%) male and 142 (41.6%) female.
- CHF-Healthy Liver consisted of 44.6% of participants, followed by 10.6% for CHF-Fibrotic and 44.9% for CHF-Cirrhotic.

		N (%)	Healthy liver	Fibrotic liver	Cirrhotic liver	
Characteristics			152 (44.6)	36 (10.6)	153 (44.9)	
Gender						
	Male	199 (58.4)	85 (42.7)	26 (13.1)	88 (44.2)	
	Female	142 (41.6)	67 (47.2)	10 (7.0)	65 (45.8)	
Race						
	White	157 (46.0)	63 (40.1)	15 (9.6)	79 (50.3)	
	Black	114 (33.4)	56 (49.1)	11 (9.7)	47 (41.2)	
	Hispanic	39 (11.4)	19 (48.7)	5 (12.8)	15 (38.5)	
	Asian	13 (3.8)	7 (53.9)	5 (38.5)	1 (7.7)	
	Other	18 (5.3)	7 (38.9)	0 (0)	11 (61.1)	
Social determinants of health	National average%					
	Low education	9.4	95 (27.9)	36 (37.9)	11 (11.6)	48 (50.5)
	Low income	11.4	112 (36.3)	44 (39.3)	13 (11.6)	55 (49.1)
	No health insurance	8.6	12 (3.5)	8 (66.7)	3 (25.0)	1 (8.3)
	Household food insecurity		99 (31.2)	42 (29.2)	12 (36.4)	45 (32.1)
	Adult food insecurity	10.5	96 (30.3)	41 (28.5)	12 (36.4)	43 (30.7)
	No/limited employment	8.1	121 (35.5)	47 (38.8)	12 (9.9)	62 (51.2)

Table 1. Participants demographic

- The prevalence of SDOH variables triple the prevalence of national average provided by the U.S. Census Bureau: LE (27.9% vs 9.4%), LI (36.3% vs 11.4%), FI (30.3% vs 10.5%), and NE (35.5% vs 8.1%). The prevalence of NI is one third of the national average (3.5% vs 8.6%).

RESULTS: Continued

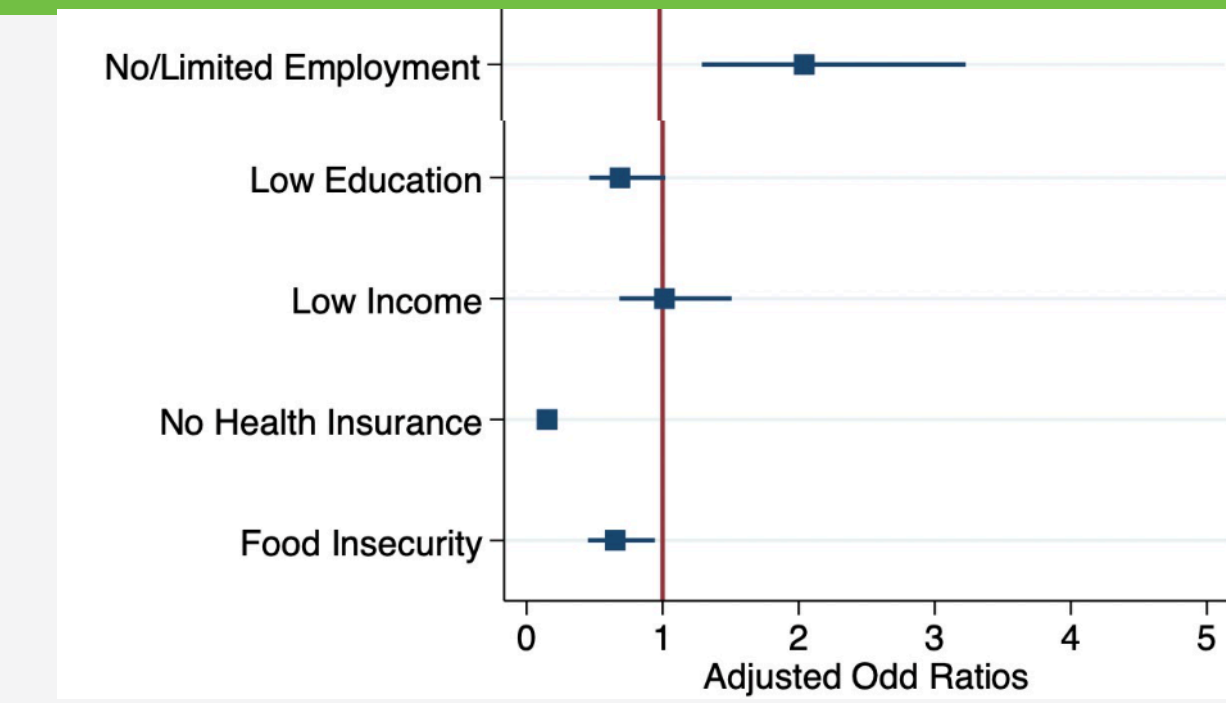


Table 2. SDOH variables and likelihood of increased healthcare utilization

- Adjusted for different CHF-liver stiffness manifestation, the odds of increased healthcare utilization doubles when patients have no/limited employment ($p < 0.01$)
- CHF-Fibrotic are more likely to have increased healthcare utilization (OR 1.14, 95% CI 1.03-1.26, $p < 0.01$) than CHF-Healthy. CHF-Cirrhotic are more likely to have increased healthcare utilization (OR 1.15, 95% CI 1.04-1.27, $p < 0.01$) than CHF-Fibrotic.

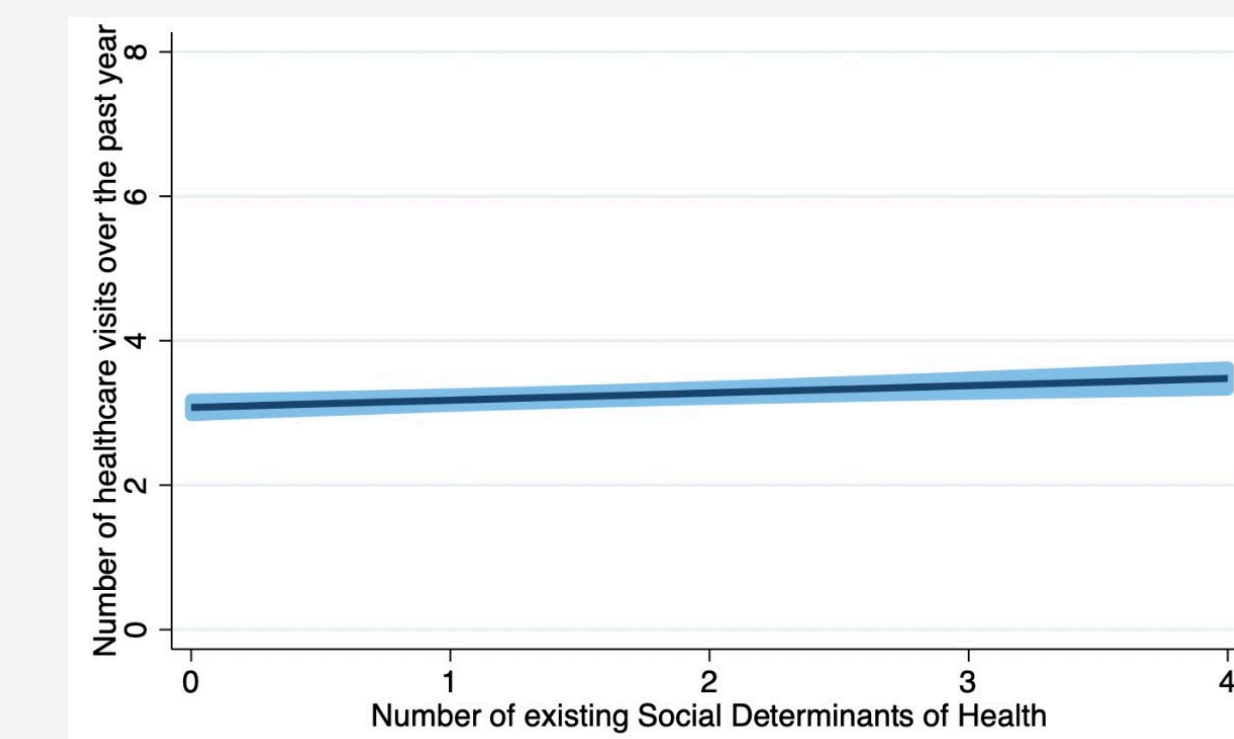


Table 3. Likelihood of increased healthcare utilization by # of existing SDOH

- Having more SDOH variables increases the odds of more healthcare visits ($p < 0.01$) regardless of CHF-Liver category.

Discussion: Barriers & Strategies

Key Findings

- CHF with more advanced liver diseases is associated with an increased number of existing SDOH needs and increased healthcare utilization
- We cannot completely discredit the clinical significance of social determinants of health in CHF with normal or fibrotic liver, because once patient advanced to CHF-Cirrhotic, increasing healthcare utilization is inevitable regardless of any existing social determinant of health

Limitations

- Secondary data renders biases on data collection and data utilization