

Jagpreet Chhatwal<sup>1,2</sup>, Alec Aaron<sup>1</sup>, Rohit Loomba<sup>3,4</sup> Muhammed Haseeb<sup>5</sup>, Elliot Tapper<sup>6</sup>, Kalyani Sonawane<sup>7</sup>, Fasiha Kanwal<sup>8</sup>

<sup>1</sup> Massachusetts General Hospital Institute for Technology Assessment, Boston, MA; <sup>2</sup> Harvard Medical School, Boston, MA; <sup>3</sup> NAFLD Research Center, Division of Gastroenterology and Hepatology, Department of Medicine, University of California at San Diego, San Diego, CA; <sup>4</sup> School of Public Health, University of California at San Diego, La Jolla, CA; <sup>5</sup> Division of Gastroenterology, Hepatology and Nutrition at University of Pittsburgh School of Medicine, Pittsburgh, PA; <sup>6</sup> Division of Gastroenterology and Hepatology, University of Michigan Medical School, Ann Arbor, MI; <sup>7</sup> Medical University of South Carolina, Charleston, SC; <sup>8</sup> Section of Gastroenterology and Hepatology, Department of Medicine, Baylor College of Medicine, Houston, TX

## Background

- Metabolic dysfunction-associated steatotic liver disease (MASLD), previously known as nonalcoholic fatty liver disease, affects up to 38% of the global population and is one of the leading risk factors for liver cancer and liver transplants in the United States.<sup>1</sup>
- Most MASLD patients become aware of their condition in the late stages, and the evidence generally suggests many afflicted individuals are unaware.<sup>2</sup>
- Given this, our objective was to assess the prevalence, personal awareness, and factors associated with awareness of MASLD among adults in the United States

## Methods

### A Design and Participants

- The NHANES survey is a nationally representative cross-sectional survey conducted in two-year cycles from 1999-2020.
- Patients from the 1999-2020 NHANES who had completed Mobile Examination Center (MEC) examinations were included in the analysis.
- Participants were excluded if they:
  - Were under 18 years old
  - Had a positive urine pregnancy test
  - Had a history of a prior hepatitis B or C infection
  - Had missing information on the laboratory biomarkers used to calculate the USFLI
  - Or had evidence of heavy drinking
- After accounting for the exclusion criteria, the final sample included the remaining 15,401 patients

### B Clinical Definitions

- Patients with MASLD were identified based on a United States Fatty Liver Index (USFLI) score of greater than 30.<sup>3</sup>
- $$USFLI = \frac{e^{(-0.8073 \cdot A + 0.3458 \cdot B + 0.0093 \cdot C + 0.6151 \cdot \log_e(D) + 0.0249 \cdot E + 1.1792 \cdot \log_e(F) + 0.8242 \cdot \log_e(G - 14.7812))}}{(1 + e^{(-0.8073 \cdot A + 0.3458 \cdot B + 0.0093 \cdot C + 0.6151 \cdot \log_e(D) + 0.0249 \cdot E + 1.1792 \cdot \log_e(F) + 0.8242 \cdot \log_e(G - 14.7812))})} \cdot 100$$

A = non-Hispanic Black  
B = Mexican American  
C = Age  
D = GGT  
E = Waist Circumference  
F = Insulin  
G = Glucose
- An individual was considered to have advanced fibrosis if they had a FIB-4 score of greater than 2.67<sup>4</sup>

$$FIB = \frac{Age * AST}{Platelets * \sqrt{ALT}}$$

- Awareness of MASLD with and without fibrosis was determined by the participant's response to the medical conditions questionnaire portion of the NHANES survey question MCQ160L.

### C Main Outcomes

- The primary outcome was an individual's awareness of their own MASLD
- Analyses incorporated the strata, cluster, and weight variables included in the NHANES data set to account for the complex survey design and oversampling
  - All prevalence estimates are reported with 95% confidence intervals.
  - Multivariate logistic regression was used to evaluate the association between various factors and MASLD awareness, and odds ratios with 95% confidence intervals are presented.

## Results

**Table 1. Associations between demographic characteristics and awareness of MASLD**

	Awareness of MASLD	
	Odds Ratio	95% CI
Age (in years)		
18-49	Ref	
50-65	1.40	(0.88, 2.23)
65+	1.26	(0.81, 1.95)
Sex		
Female	Ref	
Male	1.09	(0.72, 1.65)
Household Income		
Below Poverty Line	Ref	
Between 1- and 2-Times Poverty Line	1.05	(0.66, 1.67)
Between 2- and 5-Times Poverty Line	0.97	(0.64, 1.46)
Greater than 5-Times Poverty Line	0.91	(0.52, 1.61)
Race and Ethnicity		
White	Ref	
Black	0.39	(0.20, 0.73)
Mexican American/Other Hispanic	1.49	(1.00, 2.22)
Other (including Multi Racial)	1.61	(0.83, 3.14)
Body Mass Index		
Underweight	1.16	(0.13, 10.10)
Normal	Ref	
Overweight	1.02	(0.45, 2.34)
Obese I	1.72	(0.78, 3.76)
Obese II	1.76	(0.78, 4.08)
Obese III	2.60	(1.18, 5.74)
Place for Routine Care		
No	Ref	
Yes	3.20	(1.47, 6.96)
Condition Severity		
MASLD	Ref	
MASLD with Advanced Fibrosis	3.14	(1.93, 5.11)

## Key Findings

- 1 MASLD (previously known as NAFLD) affects up to 32.4% (31.3%, 33.5%) of the U.S. adult population, while 2.9% (2.5%, 3.3%) may also have advanced fibrosis.
- 2 Only 4.9% (4.1%, 5.8%) of patients with suspected MASLD are aware of their condition. The proportion is slightly higher among patients with advanced fibrosis at 13.4% (9.4%, 17.4%)
- 3 Individuals who were aware of their MASLD were more likely to be Hispanic, Obese III, have a place for routine care, or have advanced fibrosis. While Black adults were less likely to be aware of their MASLD.

## Conclusions

- Nearly one-third of U.S. adults may have MASLD; however, only one in twenty are aware of their diagnosis.
- Public health interventions are needed to increase MASLD diagnosis and awareness and to address racial disparities in disease awareness.

### References

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