Racial & Ethnic Disparities in MAFLD among Patients with Prior Myocardial Infarction or Stroke

Avica Atri MD[1], Rasha Khan DO[1], Viha Atri MBBS[2], Shivaraj Patil MBBS[3], Nissa Blocher MD [4]

Department of Medicine, Albert Einstein Medical Center, PA; [2] Kasturba Medical College, Manipal, India; [3] Department of Cardiology, Albert Einstein Medical Center, PA; [4] Department of Endocrinology, Albert Einstein Medical Center, PA;

Introduction

- Metabolic associated fatty liver disease (MAFLD) is the most common chronic liver disease and is associated with increased risk of coronary artery disease and stroke.
- However, data on MAFLD burden in these high-risk patients is sparse.

Aims & Objectives

- To estimate the prevalence of MAFLD among patients with prior myocardial infarction (MI) or ischemic stroke (IS)
- To identify disparities in clinical and laboratory characteristics
- To evaluate the racial-ethnic disparities in MAFLD

Methods

- The National Health and Nutrition Examination Survey (NHANES) 2017-2018 database was queried to include patients ≥20 years old with prior MI or IS.
- Patients with a liver ultrasonography with transient elastography were included, and those with a history of hepatitis B or C or daily alcohol consumption >30 g in men and >20 g in women were excluded.
- MAFLD was diagnosed based on a Fibroscan CAP (controlled attenuation parameter) ≥302 dB/m and severity graded on Vibration Controlled Transient Elastography (VCTE) with cutoffs of 8.2 kPa, 9.7 kPa, and 13.6 kPa for fibrosis grades ≥F2, ≥F3, and F4, respectively.

Results

- A total of 10,258,276 patients (median age: 65 years; female: 42.1%) were included (weighted)
- The overall prevalence of MAFLD was 39.3%.
- MAFLD patients were slightly younger and had lower proportion of females. As expected, BMI, Waist circumference (WC), LDL-C, TG, HbA1c%, were found to be significantly higher in MAFLD patients ***(Table 1).***

Table 1: Clinical and Laboratory Characteristics of MAFLD and non-MAFLD Patients with Prior Myocardial Infarction or Stroke

Variable	MAFLD	Non-MAFLD	P value
Age (years; x̃)	64	66	<0.001
Female %	28.9	50.6	<0.001
Diabetes %	42.5	14.7	<0.001
HTN %	64.2	49.1	<0.001
Hyperlipidemia %	26.7	33.2	<0.001
BMI (kg/m2; x̃)	33.5	28.1	<0.001
Waist circumference (cm; x̃)	116	99	<0.001
Total Cholesterol (mg/dl; x̃)	174	177	<0.001
LDL Cholesterol (mg/dl; x̃)	111	99	<0.001
HDL Cholesterol (mg/dl; x̃)	41	53	<0.001
Triglycerides (mg/dl; x̃)	142	108	<0.001
HbA1c % (x̃) -Overall	6.4	5.7	<0.001

Table2: Prevalence and Severity of MAFLD in Patients with Prior Myocardial Infarction or Stroke Stratified by Race and Ethnicity

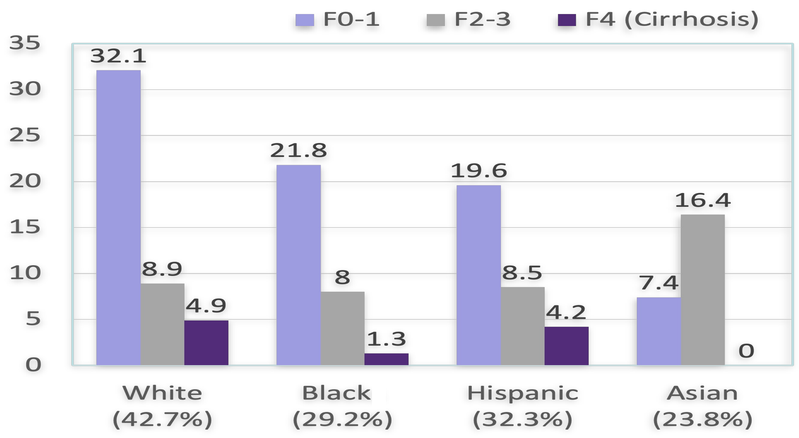
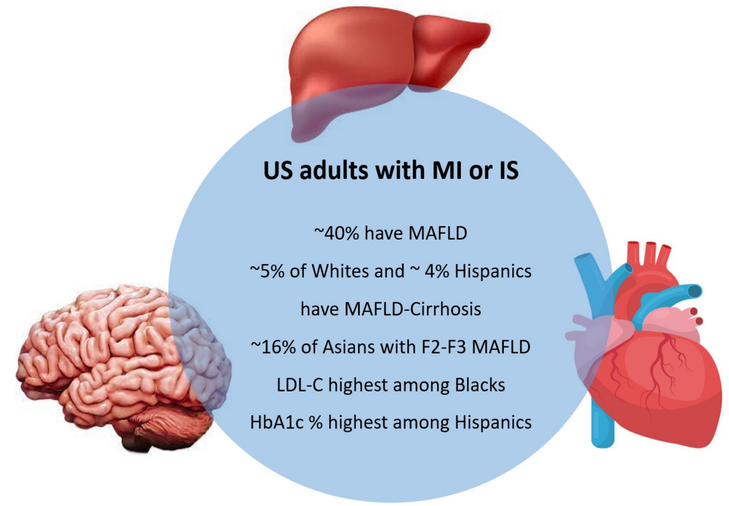


Table 3: Clinical and Laboratory Characteristics of MAFLD Patients with Prior Myocardial Infarction or Stroke Stratified by Race and Ethnicity

Variable	White N= 3233400	Black N= 464429	Hispanic N= 265040	Asian N= 64797	P value
Age (years; x̃)	64	60	55	71	<0.001
Female %	43.8	33.3	57.1	33.3	<0.001
Diabetes %	42.7	47.1	29	57.4	<0.001
HTN %	64.1	71.3	61	90.6	<0.001
Hyperlipidemia %	26.1	36.7	22.4	-	<0.001
BMI (kg/m2; x̃)	32.9	33.9	35.1	31.2	<0.001
Waist circumference (cm; x̃)	116.5	113	120.6	113	<0.001
Total Cholesterol (mg/dl; x̃)	160	190	174	159	<0.001
LDL Cholesterol (mg/dl; x̃)	99	126	111	111	<0.001
HDL Cholesterol (mg/dl; x̃)	40	49	38	44	<0.001
Triglycerides (mg/dl; x̃)	150	122	137	144	<0.001
HbA1c % (x̃) - Diabetic	7.1	7.3	7.8	7.6	<0.001

Results (continued)

- Prevalence of MAFLD was highest in Whites (42.7%), lowest in Asians (23.8 %) ***(Table2).***
- MAFLD-cirrhosis too, had the highest prevalence among Whites (4.9%), followed by Hispanics (4.2 %).
- Hispanics with MAFLD were significantly younger, and had the highest BMI and WC.
- LDL-C was the highest among Blacks, while Whites had the highest TG level.
- Amongst diabetics with MAFLD, Hispanics had poorest glycemic control followed by Asians ***(Table 3)***



Conclusion

- Nearly 40% of MI/IS patients in the United States demonstrate ultrasound evidence of MAFLD.
- Significant racial and ethnic disparities exist in MAFLD prevalence and severity in the United States
- Substantial gaps between observed and target LDL-C (< 55 mg/dl), and HbA1c% (≤7%) in this high-risk population was observed.
- Recognition and targeted management of MAFLD could aid in secondary prevention of MI/IS.

References

1. Ismaiel, A., Popa, S.-L. & Dumitrascu, D. L. Acute Coronary Syndromes and Nonalcoholic Fatty Liver Disease: "Un Affaire de Coeur". *Can. J. Gastroenterol. Hepatol.* **2020**, 8825615 (2020).
2. Alkagiet, S., Papagiannis, A. & Tziomalos, K. Associations between nonalcoholic fatty liver disease and ischemic stroke. *World J. Hepatol.* **10**, 474–478 (2018).
3. Athyros, V. G. *et al.* Safety and efficacy of long-term statin treatment for cardiovascular events in patients with coronary heart disease and abnormal liver tests in the Greek Atorvastatin and Coronary Heart Disease Evaluation (GREACE) Study: a post-hoc analysis. *The Lancet* **376**, 1916–1922 (2010).
4. Shen, K., Singh, A. D., Modaresi Esfeh, J. & Wakim-Fleming, J. Therapies for non-alcoholic fatty liver disease: A 2022 update. *World J. Hepatol.* **14**, 1718–1729 (2022).