



# Racial/Ethnic Disparities in mortality in patients with NAFLD



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## Objective

To examine racial/ethnic differences in NAFLD/NASH-related mortality

## Introduction

- **Hepatic steatosis (HS)** is a finding of macrovascular fatty infiltration.
- **Nonalcoholic fatty liver disease (NAFLD)** refers to the presence of HS when there are no other causes of fatty infiltration/cirrhosis.
- **Nonalcoholic steatohepatitis (NASH)** a more severe form of NAFLD associated with inflammation of the liver and liver cell damage.
- Long term, NAFLD can lead to fibrosis, or scarring, of the liver

## Prevalence

- Prevalence of NAFLD in the US rose from 15% in 2005 to 25% 2020
- NAFLD is one of the most common cause of chronic liver disease in the US.
- Disparities in NAFLD prevalence
- Mexican Americans: 21.2%
- Non-Hispanic Whites (NHW): 12.5%
- Non-Hispanic Blacks (NHB): 11.6%

## Methods

- **NHANES linked to US Mortality Data**
- Cross-sectional, multistage, stratified, clustered probability samples of non-institutionalized US civilian population
- Each NHANES wave provides a **nationally representative sample of the US population** for the period
- Data Collection: Household Interview and Mobile Clinical Exam
- NHANES III (1988-1994)
- **US National Death Index data**

## Methods Cont.

- Eligibility Criteria: ages 20-74 years old; complete data (including ultrasound)
- Exclusions: elevated transferrin level >50%; chronic hep B/C; excessive alcohol use; hepatotoxic medications
- Overall Study Sample = **13,899**
- Data Analysis: Descriptive statistics , Bivariate analysis , Cox proportional hazards model

## Results

| Variable            | White       | Black             | Mexican American  |
|---------------------|-------------|-------------------|-------------------|
| n                   | 5064        | 4149              | 4162              |
| Age                 | 20-49 (50%) | 20-49 (70%)       | 20-49 (72%)       |
| Male                | 2342 (46%)  | 1837 (44%)        | 2074 (49%)        |
| Smoking status      |             |                   |                   |
| Current             | 1416 (27%)  | 1428 (34%)        | 975 (23%)         |
| Former              | 1540 (30%)  | 667 (16%)         | 895 (21%)         |
| Non-smoker          | 2108 (41%)  | 1994 (48%)        | 2292 (55%)        |
| Alcohol use         |             |                   |                   |
| Current Drinkers    | 2652 (52%)  | 1791 (43%)        | 1927 (46%)        |
| Historical drinkers | 1769 (34%)  | 1437 (34%)        | 1363 (32%)        |
| Never drinkers      | 580 (11%)   | 726 (17.4%)       | 780 (18.7%)       |
| BMI                 |             |                   |                   |
| Normal              | 2208 (43%)  | 1524 (36%)        | 1409 (33%)        |
| Overweight          | 1692 (33%)  | 1295 (31%)        | 1509 (38%)        |
| Obese               | 1164 (22%)  | <b>1265 (30%)</b> | <b>1143 (27%)</b> |
| Diabetes            | 289 (5%)    | <b>315 (7%)</b>   | <b>391 (9%)</b>   |
| Hypertension        | 1451 (28%)  | 1304 (31%)        | 845 (20%)         |
| HS                  | 1096 (21%)  | 706 (17%)         | 1233 (30%)        |
| NAFLD               | 731 (14%)   | 469 (11%)         | 769 (18%)         |
| NASH                | 190 (3%)    | 120 (2%)          | 217 (5%)          |

|       | White                   |                  | Black                |         | Mexican American        |             |
|-------|-------------------------|------------------|----------------------|---------|-------------------------|-------------|
|       | Hazard Ratio (95%CI)    | p-value          | Hazard Ratio (95%CI) | p-value | Hazard Ratio (95%CI)    | p-value     |
| HS    |                         |                  |                      |         |                         |             |
| Yes   | <b>1.21 (1.06-1.39)</b> | <b>&lt;0.01</b>  | 1.22 (0.97-1.54)     | 0.08    | 1.02 (0.84-1.24)        | 0.85        |
| No    | <b>Ref</b>              |                  | Ref                  |         | Ref                     |             |
| NAFLD |                         |                  |                      |         |                         |             |
| Yes   | <b>1.29 (1.14-1.48)</b> | <b>&lt;0.001</b> | 1.16 (0.96-1.40)     | 0.12    | <b>1.21 (1.04-1.40)</b> | <b>0.01</b> |
| No    | <b>Ref</b>              |                  | Ref                  |         | <b>Ref</b>              |             |
| NASH  |                         |                  |                      |         |                         |             |
| Yes   | 1.16 (0.86-1.57)        | 0.33             | 1.20 (0.94-1.53)     | 0.13    | 0.84 (0.57-1.22)        | 0.35        |
| No    | Ref                     |                  | Ref                  |         | Ref                     |             |

## Recommendation

- As America and the world continues to gain weight more research will need to be focused on NAFLD and its management.
- More effort is needed to prevent patients from progressing to fatty liver disease, especially minority patients.

## Conclusion

- Mexican Americans have higher rates of HS, NASH, and NAFLD in comparison to Whites and Blacks.
- Among NHWs, HS and NAFLD are associated with higher mortality
- Among Mexican Americans, only NAFLD was significantly associated with higher mortality
- Among NHBs, none of these conditions was associated with higher mortality

## References

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