

Difference in fat storage may explain lower rate of liver disease in African-Americans

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Researchers, including Drs. Jeffrey Browning (left) and Richard Guerrero, have demonstrated that where different ethnic groups store fat in their bodies may account for variations in the rates those groups develop insulin resistance and non-alcoholic fatty liver disease. Credit: UT Southwestern Medical Center

Where different ethnic groups store fat in their bodies may account for differences in the likelihood they'll develop insulin resistance and non-alcoholic fatty liver disease, researchers at UT Southwestern Medical Center have found.

According to research reported in the online edition and the March issue of *Hepatology*, [African-Americans](#) with [insulin resistance](#) might harbor factors that protect them from this form of metabolic [liver disease](#).

Despite similarly high rates of associated risk factors such as insulin

resistance, obesity and diabetes among African-Americans and Hispanics, African-Americans are less likely than Hispanics to develop non-alcoholic [fatty liver disease](#), or NAFLD. The disease is characterized by high levels of triglycerides in the liver and affects as many as one-third of American adults.

"If we can identify the factors that protect African-Americans from this liver disease, we may be able to extrapolate those to other populations and perhaps develop targeted therapies to help populations prone to NAFLD," said Dr. Jeffrey Browning, assistant professor of internal medicine in the UT Southwestern Advanced Imaging Research Center and the study's senior author.

Previous research has shown that when African-Americans do develop NAFLD, they're less likely to reach the later stages of liver disease. Prior work by Dr. Browning and other UT Southwestern scientists has revealed that NAFLD is more prevalent among Hispanics than African-Americans or Caucasians.

For the current study, Dr. Browning and his colleagues analyzed data gathered in the multi-ethnic, population-based Dallas Heart Study. Starting in the year 2000, more than 2,100 participants provided blood samples and underwent multiple body scans with [magnetic resonance imaging](#) and computed tomography to examine the liver, heart and other organs. Body composition, including [fat](#) distribution, also was scrutinized.

The study found that African-Americans and Hispanics both have obesity rates of about 48 percent among their respective populations, as well as diabetes rates of about 21 percent. Only 23 percent of African-Americans, however, have NAFLD, compared with 45 percent of Hispanics.

Similarly, African-Americans are less likely to have high levels of triglycerides and abdominal fat - both characteristics of insulin resistance - when compared with Hispanics or Caucasians, even though overall rates of insulin resistance among all groups are the same, researchers found.

"This presents something of a paradox," Dr. Browning said.

The explanation might lie in where different ethnic groups typically store fat.

Obese Hispanics tend to deposit fat in the liver and visceral adipose tissue - the area around the belly. Obese African-Americans deposit fat predominantly in subcutaneous adipose tissues - the area around the hips and thighs, Dr. Browning said.

"This may be protective," Dr. Browning said. "In animal studies, if subcutaneous fat is increased as opposed to visceral fat, you can actually reverse fatty liver disease."

Scientists aren't sure why the location of fat storage matters.

"This seems to argue that there is a fundamental difference in the lipid metabolism between African-Americans and Hispanics or Caucasians, and this difference is maintained even when insulin resistance is present," Dr. Browning said.

Differences in liver-fat content in Caucasians seem to be based on gender. Caucasian males are at the highest risk for NAFLD, on par with the risk faced by Hispanics in general. Caucasian females are on par with the African-American population, at about 23 percent. Caucasian females, like African-Americans, might benefit from the greater predilection to store fat in lower extremities.

"Research studies traditionally have been based on examining Caucasian males, but this information suggests that there are sometimes ethnic and gender differences that need to be studied individually to determine if there are important clues we're missing because we're lumping everybody together," Dr. Browning said.

Researchers next will study how differences in metabolism affect fatty liver disease.

Source: UT Southwestern Medical Center ([news](#) : [web](#))

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