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Developing a Fatty Liver Increases Your Risk of Mortality

Analysis by Dr. Joseph Mercola | July 28, 2026

STORY AT-A-GLANCE

- Fatty liver disease affects nearly 25% of adults globally and progresses silently, leading to cirrhosis, heart disease, diabetes, and liver cancer
- Research shows that fatty liver disease significantly increases mortality risk, especially from endocrine disorders and during the first year after diagnosis
- Cardiovascular disease ranks as a top threat for people with fatty liver disease, with advanced liver fibrosis substantially increasing the risk of serious adverse events
- Excessive fructose consumption from processed foods triggers de novo lipogenesis (fat creation) in the liver and promotes insulin resistance, even without alcohol consumption
- Treatment focuses on addressing root causes through dietary changes, regular physical activity, weight management, muscle-building, and addressing metabolic imbalances like insulin resistance

Fatty liver disease is becoming a widespread condition, affecting nearly 25% of adults globally.[1] In other words, about one in every four people around you likely have a fatty liver without even realizing it.

As the name implies, fatty liver is characterized by an abnormal buildup of fat in your liver cells, which triggers inflammation, damages healthy tissue, and eventually leads to permanent scarring known as cirrhosis. Most people living with fatty liver disease don't experience clear symptoms at first, but as it worsens, fatigue, persistent abdominal discomfort, or unexplained weight loss begin to appear.

Without proper intervention, fatty liver disease progresses to severe liver damage and also significantly raises your risk of heart disease, Type 2 diabetes, and even liver cancer. Even more alarming, research shows that it is directly linked to increased mortality, even in its earlier stages.

Linoleic Acid and Choline Deficiency — A Deadly Combination That Leads to Fatty Liver Disease

In the context of fatty liver disease, excessive **linoleic acid** (LA) intake is one of the biggest factors because of how it affects your cellular health. Alongside this issue is the lack of choline from your diet. I cover these topics in a study I wrote, which I will share more about in the near future.

- **Excess LA creates toxic metabolites —** When LA, an omega-6 polyunsaturated fat (PUF), becomes peroxidized, it creates metabolites such as 4-hydroxynonenal (4-HNE), which is a reactive aldehyde known to affect mitochondrial membrane integrity that leads to a buildup of fat in the liver.

  As noted in a Nutrients study, "[A] few studies suggested that omega-6 PUFA is related to chronic inflammatory diseases such as obesity, nonalcoholic fatty liver disease and cardiovascular disease."[2]

- **Choline deficiency contributes to fat buildup —** Choline helps maintain cell membrane integrity, and research shows that if there's a deficiency, fat accumulates in the liver because of impaired very low-density lipoprotein (VLDL) secretion.[3]

  Your liver produces VLDL to transport fat and cholesterol to the cells throughout your body by way of your bloodstream.[4] But if there's not enough phosphatidylcholine (which is synthesized via enough choline intake), fat stays in the liver instead.

- **LA and choline deficiency undermine your health —** According to independent nutrition researcher Chris Masterjohn, Ph.D., eating foods high in LA while not getting enough choline creates a vicious cycle that ends up with fatty liver disease:[5]

> *"I currently believe that dietary fat, whether saturated or unsaturated, and anything that the liver likes to turn into fat, like fructose and ethanol, will promote the accumulation of fat as long as we don't get enough choline.*
>
> *Once that fat accumulates, the critical factor igniting an inflammatory fire to this fat is the consumption of too much PUFA (polyunsaturated fat from vegetable and perhaps fish oils)."*

Excess Fructose — Another Factor Linked to Fatty Liver Disease

As noted earlier, fatty liver disease is on the rise in America. The original assumption is that alcohol consumption contributed to this pervasive public health issue. However, research shows that you don't even need to drink to develop fatty liver disease, and another culprit is a common ingredient excessively used in most processed foods — fructose.

- **Too much processed fructose harms your liver —** Your liver is able to handle modest amounts of fructose by converting it into energy. But when it suddenly receives an influx beyond what is normal (example, when you consume a sweetened drink), your liver undergoes de novo lipogenesis, which means it creates new fat.

- **Increased risk of insulin resistance —** Consuming high amounts of processed fructose makes your cells more susceptible to insulin resistance. Under normal conditions, insulin helps move sugar from the bloodstream into your cells to be used as energy. But once your cells don't respond to insulin as they used to, the sugar remains in your blood, causing blood sugar levels to rise and contribute to disease.

- **Excess refined sugar shifts your body's metabolic priorities —** To make matters worse, the fructose-driven processes in your liver reduce your body's ability to burn fat because the bulk of the metabolic effort is aimed at managing the incoming flood of sugar. If this becomes chronic, your body will create more fat that it can comfortably use, increasing your risk of health issues such as heart disease and fatigue.

To be clear, **fructose by itself isn't necessarily harmful**. It's also found in fruits, which contribute to optimal health. The difference is that fruit also contains dietary fiber, vitamins, and other bioactive compounds that slow down fructose absorption. It's really only processed and refined fructose that is problematic.

So, to protect your liver from developing fatty deposits, even if you're not drinking alcohol, the solution is obvious — choosing natural sources of sweetness is better compared to processed drinks and foods.

A Deeper Look Into Cause-Specific Mortality Findings

A study published in the Journal of Hepatology[6] set out to uncover exactly how fatty liver disease relates to different causes of death. Instead of solely focusing on common cardiovascular or liver-related outcomes, the researchers dug deeper, looking into a wide range of medical issues to show if some conditions were more sharply elevated than others under the influence of fatty liver disease.

- **Endocrine-related issues stand out —** One noteworthy finding by the study is a noticeable increase in the likelihood of death from endocrine-related causes for people dealing with fatty liver disease.

  Endocrine disorders involve hormonal imbalances in organs like the pancreas or thyroid. While you may think of heart or liver complications whenever you hear the phrase "fatty liver disease," this study showed that hormone-related mortalities

were also significantly higher in patients diagnosed with fatty liver disease. Specifically, the risk for these endocrine causes of death are three times more than that of individuals without fatty liver disease.

- **Fatty liver disease makes you more susceptible to other chronic conditions —** The researchers also addressed deaths attributed to infections, gastrointestinal disease (excluding direct liver conditions), and mental health disorders.

  Infections and gastrointestinal problems saw an elevated risk overall, theorizing that fatty liver disease sets off a chain reaction that reduces resilience to certain bacterial or viral threats, as well as creating an environment that is more prone to digestive imbalances.

  Furthermore, the researchers noted that the risk of mortality specifically from mental health conditions was not meaningfully increased. However, this is still a noteworthy finding nonetheless.

- **Liver cirrhosis causes a cascade of disease —** One aspect that deserves mention is the comparison of mortality risk in different subgroups who also suffered from cirrhosis.

  Those with advanced cirrhosis showed the greatest vulnerability when it came to non-liver causes of death, even beyond what people usually imagine from hearing “cirrhosis.” Once the liver is significantly compromised, the effects on multiple organ systems become more pronounced.

- **The earlier you get treatment, the better the outcome —** The research indicated that the mortality hazard was particularly high during the first year after participants received their fatty liver disease diagnosis. That means if you’re diagnosed with this condition, it would be wise to take positive steps sooner rather than later — the health and lifestyle changes you choose will have the biggest impact in those early months.

- **Fatty liver disease sets the stage for more severe outcomes —** The authors proposed that the metabolic environment surrounding fatty liver disease fosters widespread inflammation and an overload of fatty substances in the bloodstream, which wears down tissues beyond the liver. This chronic state of bodily "alert" reduces a person's ability to handle secondary complications like infections or hormonal imbalances in the thyroid or pancreas.

Overall, these findings shed light on how fatty liver disease escalates health risks in ways that go well beyond heart or cancer concerns. By uncovering which conditions spike the most, medical professionals and affected patients will be able to adopt a more targeted approach to prevention and eventual healing.

Additional Insights Into Fatty Liver Disease-Related Mortality

A supporting study published in Clinical Molecular Hepatology[7] focused on the different ways fatty liver disease impacts a person's survival. Similar to the Journal of Hepatology study, the researchers assessed which ailments hit hardest, investigating the relative importance of heart complications, cancer, liver failure, and diabetes-related deaths. In addition, they analyzed how those risks shift when fatty liver disease progresses and interacts with other conditions.

- **Cardiovascular disease ranks as a top threat —** This finding is not just in terms of incidence, but also how often it resulted in mortality for people with fatty liver disease. This challenges the assumption that liver complications always dominate the list, hinting that heart health could be even more urgent for this group.

  The team also looked at extra-hepatic cancers, which means cancers that develop outside the liver. According to their findings, extra-hepatic malignancies rose markedly in fatty liver disease patients, intensifying the likelihood of fatal outcomes in that population compared to those who don't have it.

- **A big part of the puzzle is advanced fibrosis —** For some people, fat accumulation gradually causes a chain reaction, scarring the liver extensively. This reduces the organ's ability to detoxify and regulate essential metabolic processes.

  The researchers observed that, once the scarring reaches a certain threshold, the risk of serious complications — heart attacks, strokes, and aggressive cancer developments — increases even more than expected from fatty liver disease alone. They also highlighted that metabolic factors, such as high blood sugar or lipid abnormalities, further compound these dangers.

- **Certain genetic and hormonal factors influence risk of complications —** Carrying variants of the PNPLA3 gene ramps up the severity of fatty liver disease and speeds up its progression. For context: PNPLA3 is involved in how the liver handles fats, so if the gene is slightly altered, fat piles up more rapidly, leading to extra stress on the body.

  Another point the researchers stressed involves thyroid function — having low thyroid hormone levels or even borderline levels heighten the all-cause mortality risk in fatty liver disease cases. That link is rooted in how thyroid hormones help control metabolism. If your metabolism slows or becomes erratic, more fat accumulation occurs, fueling inflammatory processes that eventually jeopardize your health.

- Sarcopenia **also increases mortality —** Muscle tissue is metabolically active, so losing it not only slows metabolism but also undermines the body's ability to process glucose, regulate insulin, and maintain robust immune defenses.

  By tracking patients who had both fatty liver disease and significant muscle loss, the researchers found a higher death rate that extended beyond liver issues alone. This finding shows that maintaining healthy muscle mass — through strength training or adequate protein intake — will be beneficial for those who already have a compromised liver profile.

- **Healthy lifestyle adjustments protect your liver —** Losing weight was deemed hugely impactful, specifically when people combined healthy eating with consistent physical activity. Essentially, when you burn excess body fat, the inflammatory load on the liver drops.

  Less stored fat means less likelihood of insulin resistance, which the study pinpointed as a driver of advanced disease. Meanwhile, the researchers observed that people who followed a healthy diet noticed sharper reductions in their overall mortality risk.

- **Chronic inflammation is a central factor —** Fatty deposits, once they accumulate enough, trigger inflammatory cells to release substances that undermine vascular integrity, hamper immune responses, and encourage unchecked cell growth. Over time, that escalates everything from minor arterial plaque formation to the emergence of malignant tumors.

Practical Strategies to Fight Fatty Liver Disease

If you're dealing with fatty liver disease, addressing the core reasons behind it is important to achieve lasting improvement. No one-size-fits-all approach exists, but committing to different targeted, meaningful lifestyle shifts will set you on a path toward healing. Here are my recommendations:

1. **Improve your diet —** The most immediate way to tackle the root cause of fatty liver is by switching to a healthy diet. Focus your meals on whole, unprocessed foods, especially vegetables, fruits, lean proteins, and healthy carbohydrates. Remember to boost your choline intake as well, which is found in pastured egg yolks, arugula, and grass fed beef liver.

   Lastly, remove ultraprocessed foods and anything that contains high-fructose corn syrup and other added sugars.

2. **Prioritize physical activity —** Exercise is one of the best things you can do for your health. Aim for at least 30 minutes of moderate-intensity activity most days of the week, such as brisk walking, cycling, or swimming.

   Increased physical activity helps your body burn off excess fat stores, especially around your liver, and boosts insulin sensitivity, directly reducing the inflammatory cycle caused by fatty liver disease.

3. **Actively manage your weight —** In relation to the previous point, excess body weight is a culprit in fatty liver development. Losing even a modest amount — around 7% to 10% of your total body weight — has dramatic benefits.[8]

   If you're obese or overweight, set achievable, incremental weight goals rather than extreme dieting. Steady, consistent reduction is the most effective way to reverse liver fat accumulation.

4. **Build and maintain muscle mass —** Muscle isn't just for strength — it's crucial for metabolism. Engage in resistance training at least twice weekly to build and preserve your muscle mass. **This boosts your body's ability to process sugar, regulate insulin, and reduce harmful fat deposits**. Essentially, healthy muscle mass directly supports liver function by lowering systemic inflammation and improving overall metabolism.

5. **Address underlying metabolic imbalances —** If you're diabetic, pre-diabetic, or insulin-resistant, improving your blood sugar control is essential. Pay close attention to your carbohydrate intake, choosing complex carbs (like white rice) over simple sugars. To understand the impact of carbohydrates on your metabolic health, read the article "**The Hidden Health Benefit of Carbohydrates**."

6. **Consider citicoline supplementation —** As noted earlier, choline deficiency creates fatty deposits in your liver because the organ is not able to send the produced VLDL throughout your body. To boost your intake, consider taking supplements. However, not just any choline supplement will do — I recommend citicoline because most forms of choline supplements have poor availability.

Citicoline is the immediate precursor for the synthesis of phosphatidylcholine, and increased intake helps your fat to be transported out of your liver. Formulations differ depending on the manufacturer, ranging from 500 to 2,500 mg per day. To find out your ideal dose, consult with your health care provider because choline toxicity, while rare, is a real condition.[9]

Frequently Asked Questions About Fatty Liver Disease and Chronic Disease

Q: What exactly is fatty liver disease, and why is it a concern?

A: Fatty liver disease occurs when excess fat accumulates in liver cells, leading to inflammation, damage, and eventually, cirrhosis. It significantly increases risks for health complications such as heart disease, Type 2 diabetes, liver cancer, and endocrine disorders. This leads to higher overall mortality rates.

Q: What are the common signs of fatty liver disease?

A: Initially, fatty liver disease usually shows no clear symptoms, making early detection challenging. As it advances, symptoms like fatigue, persistent abdominal discomfort, and unexplained weight loss appear. Early screening and proactive treatment will greatly improve outcomes.

Q: How does fatty liver disease affect health beyond liver damage?

A: Beyond liver damage, fatty liver disease significantly elevates the risk of cardiovascular diseases, endocrine-related deaths, gastrointestinal issues, infections, and extra-hepatic cancers. The chronic inflammation associated with fatty liver disrupts multiple organ systems, leading to heightened vulnerability to

other health problems.

Q: What lifestyle factors contribute most to fatty liver disease?

A: Dietary factors, especially excessive fructose from sugary foods and drinks, play a major role. High fructose intake triggers fat creation in the liver, promotes insulin resistance, and reduces fat-burning capacity, exacerbating liver fat accumulation. Other critical factors include obesity, physical inactivity, and loss of muscle mass (sarcopenia).

Q: What are the best ways to treat or reverse fatty liver disease?

A: Fatty liver disease can be effectively treated or reversed by adopting a healthy diet rich in whole foods, engaging in regular physical activity, losing excess body weight, maintaining muscle mass through resistance training, and addressing underlying metabolic conditions, such as insulin resistance or diabetes. Early intervention significantly improves prognosis.

Sources and References

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