

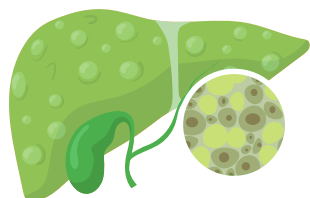
Obesity and Metabolic Dysfunction-Associated Steatotic Liver Disease: Association, Aetiology, Disease Progression, and Management

This infographic is intended for researchers and healthcare professionals and reflects the content of the following article:

Grocic, M., Nguyen, M., & Sanyal, A. J. (2026). Current trends in the epidemiology of obesity and the association between obesity and metabolic liver disease (MASLD/MASH). *Diabetes, Obesity and Metabolism*. <https://doi.org/10.1111/dom.70662>

Metabolic dysfunction-associated steatotic liver disease (MASLD)

25–40% adults affected globally



Genetic predisposition



Obesity



Individuals with severe obesity with MASLD

MASLD is a spectrum of liver diseases linked to metabolic dysfunction



Metabolic dysfunction-associated steatotic liver (MASL)

- Excess hepatic fat/steatosis
- Elevated alanine transaminase
- Presence of (at least one) cardiometabolic risk factor
 - ↑ Body mass index
 - ↑ Blood pressure
 - ↑ Fasting serum glucose/type 2 diabetes
 - ↑ Triglycerides
 - ↓ High-density lipoprotein



Metabolic dysfunction-associated steatohepatitis (MASH)

- Hepatic inflammation ± fibrosis
- Steatosis

Prevalence of obesity



Increase in global prevalence



3x rates since 1975

Projected rise in obesity and MASLD



Population will be overweight or obese by 2030



Adult population in the US will have MASLD by 2030

As a result, there will be a rise in:

- Fibrosis
- Cirrhosis
- Hepatocellular carcinoma (HCC)
- Liver-related mortality

Obesity and the development of MASLD



Excess adiposity



Systemic pro-inflammatory and insulin-resistant environment

- Gut dysbiosis
- Increased intestinal permeability ("leaky gut")
- Metabolic inflexibility
- Lipotoxicity
- Immune activation



Liver injury

- Hepatic fat accumulation
- Inflammation
- Fibrogenesis



Metabolic end-organ disease



Cirrhosis

Disease severity is determined by the balance between metabolic injury, inflammation, fibrosis, and repair mechanisms

Visit [10.1111/dom.70662](https://doi.org/10.1111/dom.70662) for additional resources



MASLD disease progression

Steatosis

Fibrosis

Cirrhosis

HCC

Slow asymptomatic progression over the years

Early screening and fibrosis assessment is crucial

MASLD amplifies risk of non-communicable diseases



Cardiovascular disease



Type 2 diabetes



Chronic kidney disease



Several cancers



Premature mortality

Management of MASLD

Weight loss is the cornerstone of preventing MASLD

Lifestyle interventions



Dietary modification
(Mediterranean diet)



Physical activity

≥ 10% weight loss is
beneficial to improve fibrosis

Weight loss alone is not
sufficient

Pharmacologic and surgical therapies to manage obesity



Glucagon-like peptide-1
receptor agonists (semaglutide)



Dual and triple incretin agonists
(tirzepatide, retatrutide)



Bariatric surgery

↓ Steatosis and
inflammation

Liver-targeted therapies

Thyroid hormone
receptor
β-selective agonist
(resmetirom)

- Resolves MASH
- Reverses fibrosis

Holistic approach to MASLD management



High-risk individuals
with obesity



Early and regular
screening for MASLD



Obesity treatment +
ongoing liver
monitoring

Determine need for
liver-targeted therapeutics

Key message

- ✓ In patients with MASLD, excess adiposity leads to metabo-inflammation, metabolic dysfunction, and end-organ liver diseases, thus obesity-oriented treatment while monitoring liver status may be a holistic approach to care

Reference:

1. Grocic, M., Nguyen, M., & Sanyal, A. J. Current Trends in the Epidemiology of Obesity and the Association Between Obesity and Metabolic Liver Disease (MASLD/MASH). *Diabetes, Obesity and Metabolism*.

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