Methods

This was a nationwide population-based cross-sectional study targeting adults aged 18 or older in Malaysia (8). Two-stage stratified random sampling was performed to sample the respondents. Data collection was conducted from July to September 2023 and involved structured interviews, physical examinations, and venous blood taking. The **response rate was 71.4%, with 1,011 respondents** eligible for analysis. Analyses were conducted using Complex Samples procedures.

The **MAFLD diagnosis** required the presence of liver steatosis and at least one of the following three criteria: overweight/obesity, ≥2 metabolic dysfunctions, or diabetes (7). Liver steatosis was detected based on a Fatty Liver Index (FLI) of ≥60. Overweight or obesity was defined as BMI ≥ 23kg/m2, and metabolic dysfunction was the presence of ≥2 out of the five metabolic risk abnormalities: i) waist circumference ≥90 cm for males and ≥80 cm for females; ii) blood pressure (BP) ≥130/85 mmHg or on specific treatment; iii) TG ≥1.7 mmol/L or on specific treatment; iv) HDL cholesterol <1.0 mmol/L for males and <1.3 mmol/L for females or on specific treatment, and v) prediabetes, defined as fasting plasma glucose (FPG) levels 5.6 to 6.9 mmol/L or glycosylated haemoglobin A1c (HbA1c) 5.7 to 6.4%.17 Diabetes was based on self-reported diabetes among known cases or having FPG ≥7.0 mmol/L or HbA1c ≥6.5% among respondents not known to have diabetes.

Among respondents with MAFLD, we also reported the **risk of advanced liver fibrosis** using the Fibrosis-4 (FIB-4) index (7). FIB-4 index was calculated using age, aspartate aminotransferase (AST), alanine aminotransferase (ALT), and platelet counts. Low fibrosis risk was defined as having a FIB-4 index of <1.3 for respondents aged <65 years and <2.0 for those ≥65 years. A score of 1.3 to 2.67 and 2.0 to 2.67 indicated moderate risk in individuals <65 and ≥65 years, respectively. A high risk of advanced fibrosis was defined by a score of >2.67 (7).

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Disclaimer

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This research highlight is based on the study on **The prevalence of metabolic syndrome and metabolic dysfunction-associated fatty liver in Malaysia 2023**

Who is this publication for?

- Disease Control Division
- Family Health Development Division
- Medical Development Division
- Health Education Division
- Nutrition Division
- Public health practitioners
- Clinicians

Purpose of this document

To highlight the high prevalence of metabolic dysfunction-associated fatty liver disease (MAFLD) in Malaysia and propose policy and clinical recommendations

Liver Matters: The High Burden of Metabolic Dysfunction-Associated Fatty Liver Disease (MAFLD) in Malaysia

Issue

"MAFLD is the most common chronic liver disease globally"

Individuals with metabolic dysfunction-associated fatty liver disease **(MAFLD)** have **increased risks of all-cause mortality**, with **cardiovascular** disease as the top cause of death, followed by **cancer** and **liver failure** (1, 2).

MAFLD can progress to liver fibrosis, cirrhosis, and hepatocellular carcinoma (3).

MAFLD is associated with diabetes, hypertension, cardiovascular disease, extrahepatic malignancies (e.g., colorectal cancer), chronic kidney disease, polycystic ovarian syndrome, osteoporosis, and obstructive sleep apnoea (2, 3).

The disease imposes **enormous disease burdens** from healthcare costs, economic losses, and decreased quality of life (4).

According to a meta-analysis, the global prevalence of MAFLD based on the fatty liver index was **28.4%** (5).

Despite the clinical and public health ramifications of MAFLD, little is known about MAFLD prevalence among the general population in Malaysia.

Key Messages

28.2% or a staggering 6.7 million adults in Malaysia have MAFLD!

- Our MAFLD individuals are **10 years younger** and **have more comorbidities,** including diabetes and hypertension, than the global average.
- The mean waist circumference, body mass index, HDL cholesterol, and LDL cholesterol are also **worse than the global average**.
- **Among those with MAFLD, 10.4%** or almost **700,000** population have **intermediate or high risk of advanced liver fibrosis** that requires further medical evaluation and management.

Background

Metabolic dysfunction-associated fatty liver disease (MAFLD), **formerly called non-alcoholic fatty liver disease (NAFLD)**, is a new term to describe fatty liver associated with metabolic syndrome (6).

NAFLD is defined as the presence of ≥5% of hepatic steatosis in the absence of other liver disease aetiologies, such as chronic viral hepatitis and significant alcohol consumption (6).

MAFLD is diagnosed based on a set of **positive criteria**, does not require the exclusion of other causes of chronic liver disease, and clearly attributes the disease to its underlying aetiology (6).

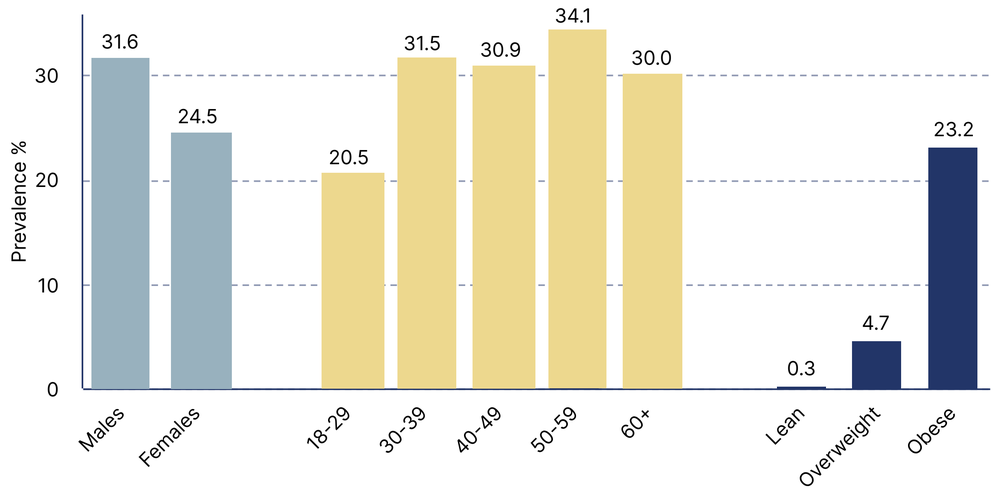
MAFLD has better clinical utility than NAFLD. For example, MAFLD (and not NAFLD) was **associated with all-cause mortality after adjusting for metabolic risk factors** (1).

MAFLD is now **widely adopted worldwide**, and the Malaysian Society of Gastroenterology and Hepatology endorsed the redefinition of fatty liver disease in 2021 and published the consensus statement on MAFLD in 2022 (7).

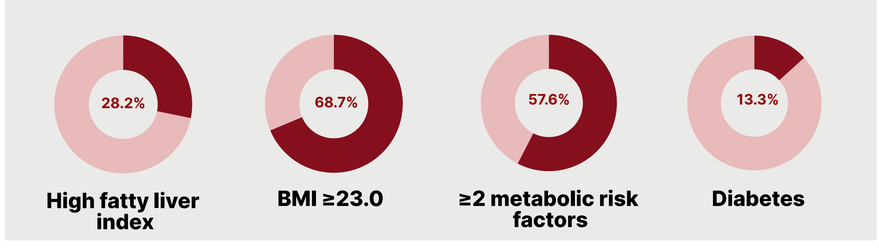
Key Findings

The prevalence of MAFLD in **Malaysia** is **28.2%**

Prevalence of MAFLD by demographic and body mass index profiles



The prevalence of MAFLD components among adults in Malaysia is high!



Characteristics of people with MAFLD	Malaysia	Global
Prevalence	28.2	28.4
Mean age, years	42.4	52.0
Mean BMI, kg/m2	32.5	27.7
Mean waist circumference, cm	102.1	92.9
Diabetes, %	24.7	22.8
Hypertension, %	47.7	43.7
Mean HDL cholesterol, mmol/L	1.13	1.22
Mean LDL cholesterol, mmol/L	3.65	3.11

- **Among those with MAFLD, 10.4%** or almost **700,000** population have **intermediate or high risk of advanced liver fibrosis** that requires further medical evaluation and management.

Key Considerations

Policymakers & programme managers

- **Acknowledge the issue and raise the priority of MAFLD** in the national health agenda-setting. For example, MAFLD can be considered to be included in the next National Strategic Plan for Non-Communicable Diseases. This aligns with the global movement to advance the public health agenda on MAFLD at the national level (4).
- **Allocate sufficient resources** to operationalise the plan, including disease surveillance and clinical management, would be important (4).
- **Expand population screening programmes** such as the National Health Screening Initiative (NHSI) to include MAFLD screening, especially among high-risk subpopulations such as males, older age categories, and those with obesity. Blood biomarkers, such as fatty liver index and fibrosis-4 score, can be used as screening tools, and high-risk individuals can be referred for further management.
- **Health promotion** via traditional and social media to increase awareness and knowledge of MAFLD among the general population is critical (4).

Healthcare practitioners

- **Increase awareness and knowledge about MAFLD management** among healthcare personnel, which includes primary care providers and specialists from relevant disciplines.
- The development of **Clinical Practice Guidelines** on MAFLD can help bring experts from different backgrounds to harmonise the management of patients.
- Patient management should focus on a **multidisciplinary approach** with a clear specialist referral pathway (7).
- Healthcare personnel, especially those in primary care should **actively screen, diagnose, and manage MAFLD** to prevent complications.

Summary of Action Points

- Raise the priority of MAFLD in the national health agenda-setting
- Include MAFLD screening in existing population screening programmes
- Health promotion to increase awareness and knowledge among the general population
- Increase knowledge about MAFLD management among healthcare personnel