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Malaysian Society of Gastroenterology & Hepatology

METABOLIC DYSFUNCTION ASSOCIATED FATTY LIVER DISEASE (MAFLD) A NEW NAME FOR AN OLD FOE

The What's and The Who's

In collaboration with:



Academy of Family Physicians
of Malaysia (AFPM)



Family Medicine Specialists'
Association of Malaysia



Federation of Private Medical
Practitioners' Associations,
Malaysia

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VIATRIS

What's in a name?

The journey from NAFLD to MAFLD

Wah-Kheong Chan

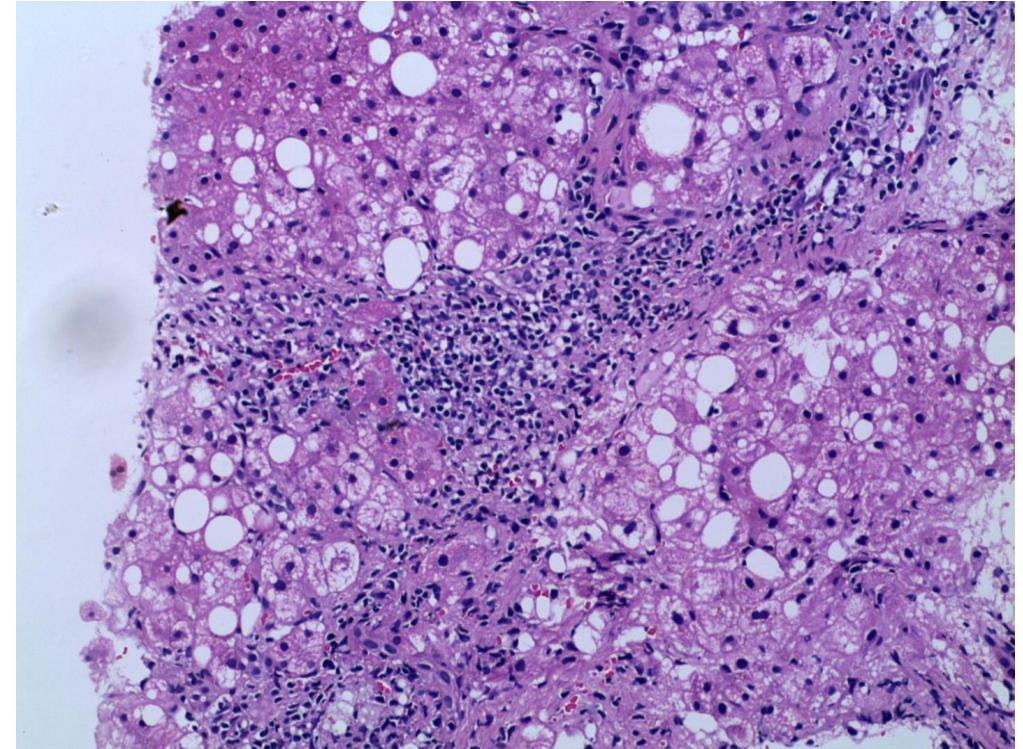
Outline

- From NAFLD to MAFLD
 - History
 - Definition of MAFLD
 - The tide of change
- Epidemiology and natural history
 - Epidemiology
 - Natural history
 - Patients with diabetes



Nonalcoholic steatohepatitis

- Liver condition mimicking alcoholic hepatitis that can progress to cirrhosis
 - No significant alcohol intake
 - Moderately obese
 - Many of them had obesity-related diseases such as diabetes mellitus

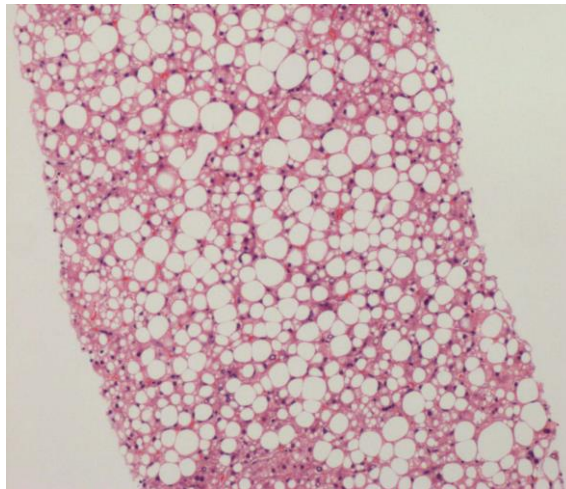


Ludwig J, et al. Mayo Clin Proc 1980.



Nonalcoholic fatty liver disease (NAFLD)

- Spectrum of liver conditions
- Characterized by excess fat accumulation
- Exclusion of significant alcohol intake and other causes of chronic liver disease
- Majority of cases are closely associated with obesity and considered as the liver manifestation of the metabolic syndrome



Wong VW, et al. J Gastroenterol Hepatol 2018.



Metabolic dysfunction associated fatty liver disease (MAFLD)

Hepatic steatosis in adults

Detected either by imaging techniques, blood biomarkers/scores or by liver histology

Overweight or obese

Defined as BMI ≥ 25 kg per m² in Caucasians or BMI ≥ 23 kg per m² in Asians

Type 2 diabetes mellitus

According to widely accepted international criteria

Presence of ≥ 2 metabolic risk abnormalities



Metabolic dysfunction associated fatty liver disease (MAFLD)

Presence of ≥ 2 metabolic risk abnormalities

- Waist circumference $\geq 102/88$ cm in Caucasian men and women (or $\geq 90/80$ cm in Asian men and women).
- Blood pressure $\geq 130/85$ mmHg or specific drug treatment.
- Plasma triglycerides ≥ 1.70 mmol/l or specific drug treatment .
- Plasma HDL-cholesterol < 1.0 mmol/L for men and < 1.3 mmol/L for women or specific drug treatment.
- Prediabetes (i.e., fasting glucose levels 5.6 to 6.9 mmol/L, or 2-hour post-load glucose levels 7.8 to 11.0 mmol) or HbA1c 5.7% to 6.4%).
- HOMA-IR ≥ 2.5
- Plasma hs-CRP level > 2 mg/L

Criteria for metabolic syndrome



Endorsing MAFLD

Hepatology International

<https://doi.org/10.1007/s12072-020-10094-2>

GUIDELINES



The Asian Pacific Association for the Study of the Liver clinical practice guidelines for the diagnosis and management of metabolic associated fatty liver disease

Mohammed Eslam¹ · Shiv K. Sarin² · Vincent Wai-Sun Wong³ · Jian-Gao Fan⁴ · Takumi Kawaguchi⁵ · Sang Hoon Ahn⁶ · Ming-Hua Zheng^{7,8} · Gamal Shiha^{9,10} · Yusuf Yilmaz^{11,12} · Rino Gani¹³ · Shahinul Alam¹⁴ · Yock Young Dan¹⁵ · Jia-Horng Kao^{16,17,18,19} · Saeed Hamid²⁰ · Ian Homer Cua²¹ · Wah-Kheong Chan²² · Diana Payawal²³ · Soek-Siam Tan²⁴ · Tawesak Tanwandee²⁵ · Leon A. Adams²⁶ · Manoj Kumar² · Masao Omata^{27,28} · Jacob George¹

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Eslam M, et al. Hepatol Int 2020.



Endorsing MAFLD

The Latin American Association for the Study of the Liver (ALEH) position statement on the redefinition of fatty liver disease



Nahum Mendez-Sanchez, Marco Arrese, Adrian Gadano, Claudia P Oliveira, Eduardo Fassio, Juan Pablo Arab, Norberto C Chávez-Tapia, Melisa Dirchwolf, Aldo Torre, Ezequiel Ridruejo, Helma Pinchemel-Cotrim, Marlen Ivón Castellanos Fernández, Misael Uribe, Marcos Giralda, Javier Diaz-Ferrer, Juan C Restrepo, Martín Padilla-Machaca, Lucy Dagher, Manuel Gatica, Blanca Olaechea, Mario G Pessôa, Marcelo Silva

Nomenclature and definition of metabolic-associated fatty liver disease: a consensus from the Middle East and north Africa



Gamal Shiha, Khalid Alswat, Maryam Al Khatry, Ala I Sharara, Necati Örmeci, Imam Waked, Mustapha Benazzouz, Fuad Al-Ali, Abd Elkhalek Hamed, Waseem Hamoudi, Dina Attia, Moutaz Derbala, Mohamed Sharaf-Eldin, Said A Al-Busafi, Samy Zaky, Khaled Bamakhrama, Nazir Ibrahim, Youssef Ajlouni, Meriam Sabbah, Mohsen Salama, Amir Anushiravani, Nawel Afredj, Salma Barakat, Almoutaz Hashim, Yasser Fouad, Reham Soliman

1. Mendez Sanchez N, et al. Lancet Gastroenterol Hepatol 2020.
2. Shiha G, et al. Lancet Gastroenterol Hepatol 2020.



Endorsing MAFLD

- The Malaysian Society of Gastroenterology and Hepatology endorses the term MAFLD.

Redefining fatty liver disease: an international patient perspective



Gamal Shiha, Marko Korenjak, Wayne Eskridge, Teresa Casanovas, Patricia Velez-Moller, Sari Högström, Ben Richardson, Christopher Munoz, Sólveig Sigurðardóttir, Alioune Coulibaly, Miskovikj Milan, Fabiana Bautista, Nancy Wai Yee Leung, Vicki Mooney, Solomon Obekpa, Eva Bech, Naveen Polavarapu, Abd Elkhalek Hamed, Temur Radiani, Edhie Purwanto, Bisi Bright, Mohammad Ali, Cecil Kwaku Dovia, Lone McColaugh, Yiannoula Koulla, Jean-François Dufour, Reham Soliman, Mohammed Eslam*

1. Tan SS, et al. Lancet Gastroenterol Hepatol 2021.
2. Shiha G, et al. Lancet Gastroenterol Hepatol 2020.



MANAGEMENT OF TYPE 2 DIABETES MELLITUS

(6th Edition)

“A new proposed nomenclature for NAFLD is **metabolic associated fatty liver disease** or MAFLD.

The major benefit of this new nomenclature is a shift towards **a diagnosis of inclusion based on the presence of metabolic dysfunction, the key driver of the disease.”**



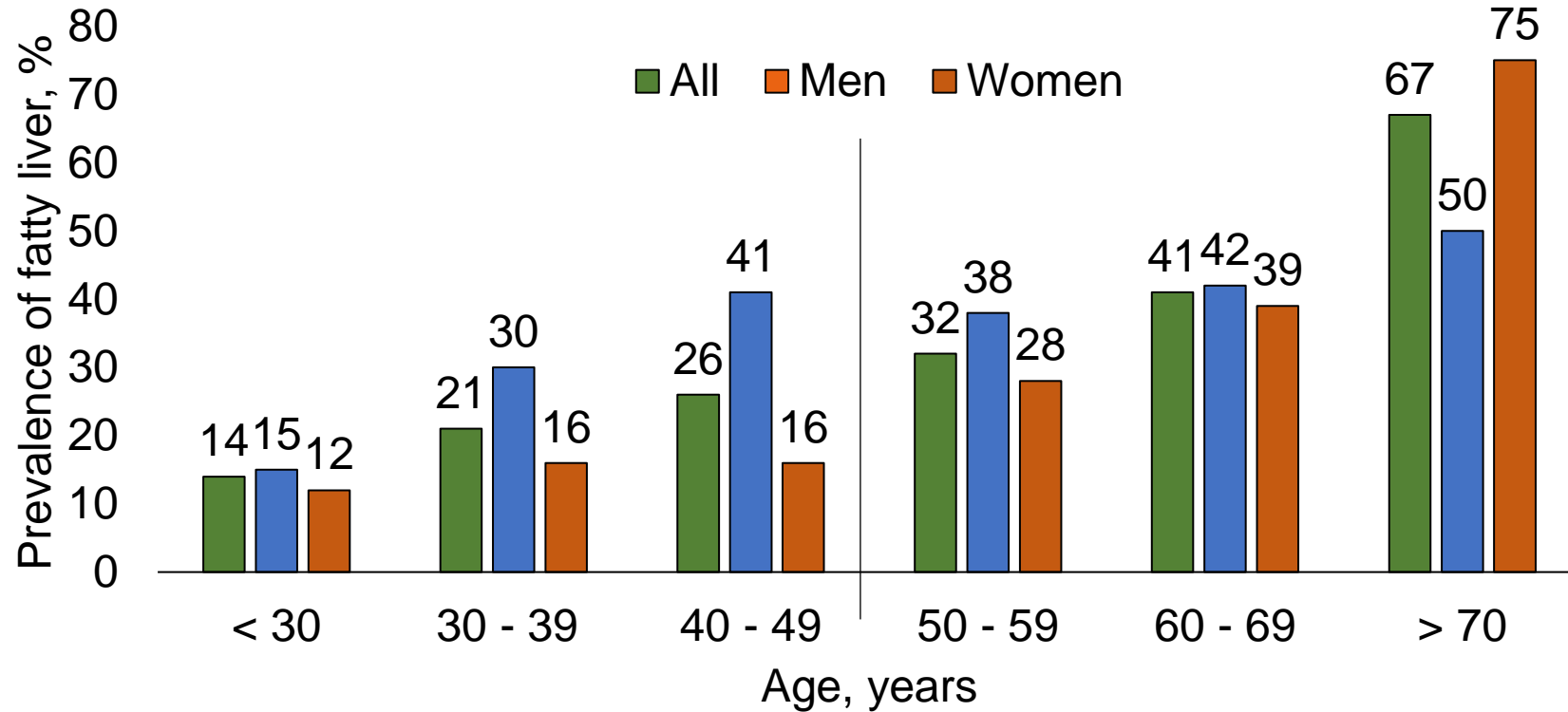
Prevalence of NAFLD in the general population

- Hong Kong
- Random selection from the government census database
- May 2008 to September 2010
- 922 subjects
- Liver fat was assessed by proton-magnetic resonance spectroscopy
- Prevalence of NAFLD **27.3%**

Wong VW, et al, Gut 2012.



Age, gender and NAFLD



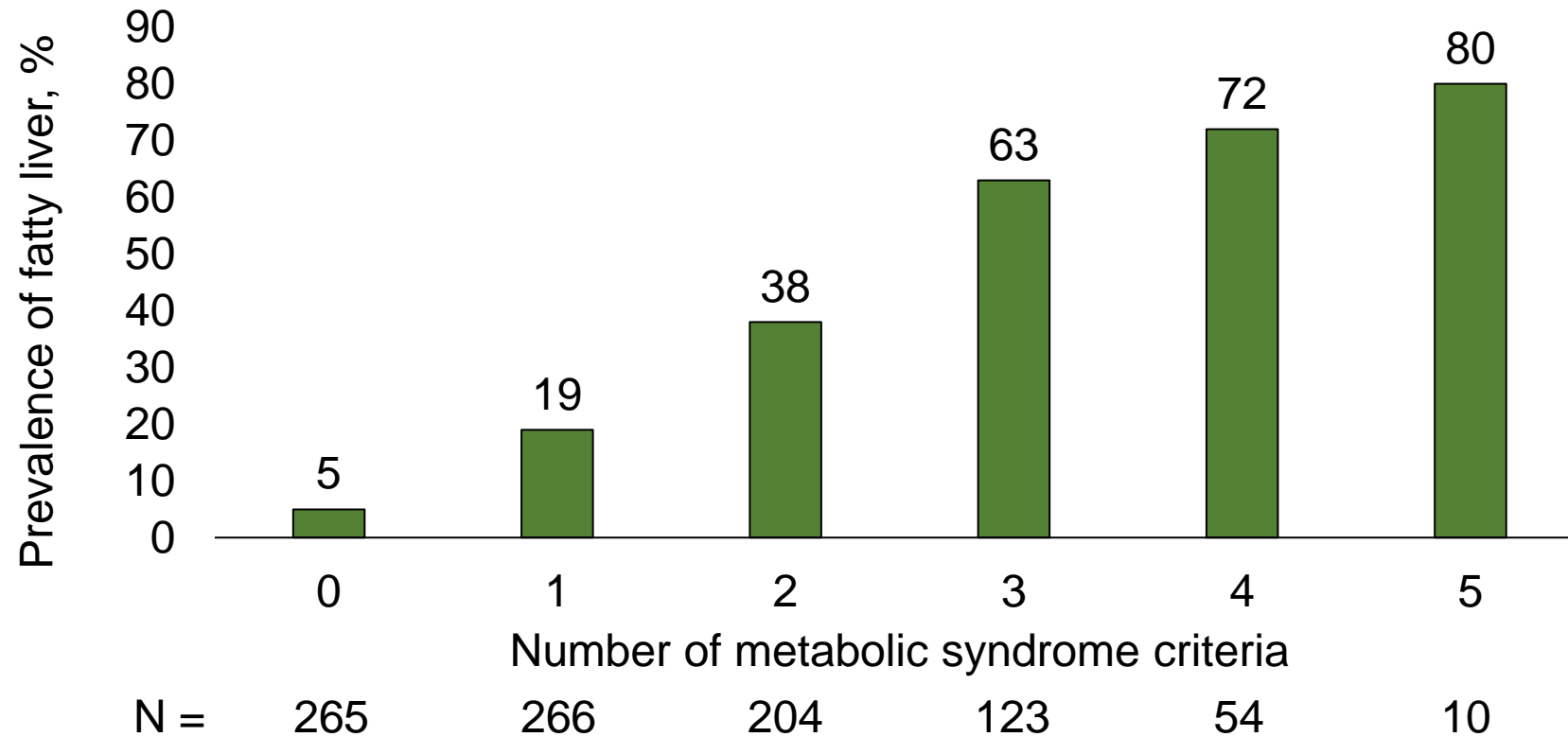
Men	N =	39	30	122	146	50	2
Women	N =	34	51	192	201	51	4

Wong VW, et al, Gut 2012.



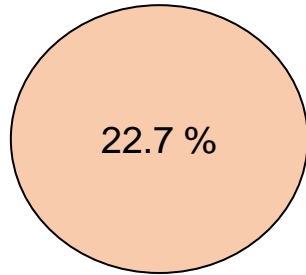
Metabolic syndrome and NAFLD

Central obesity, impaired fasting glucose or diabetes mellitus, hypertension, high triglyceride, low HDL-cholesterol



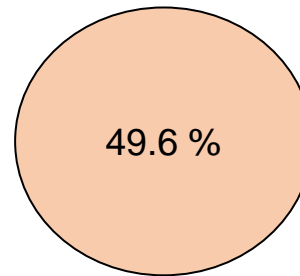
Prevalence of NAFLD in Malaysia

Health-check individuals



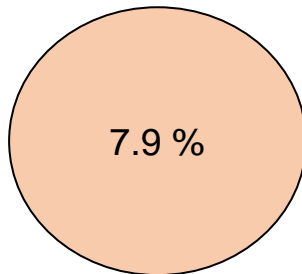
Goh SC, et al. Hepatol Int 2013.

Patients with diabetes mellitus



Chan WK, et al. J Gastroenterol Hepatol 2013.

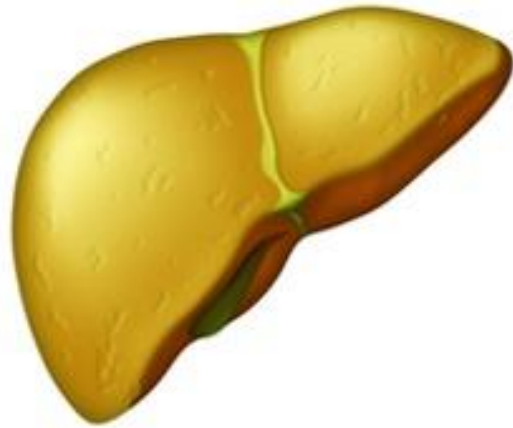
Young adults



Chan WK, et al. Hepatol Int 2014.



MAFLD and cardiovascular disease

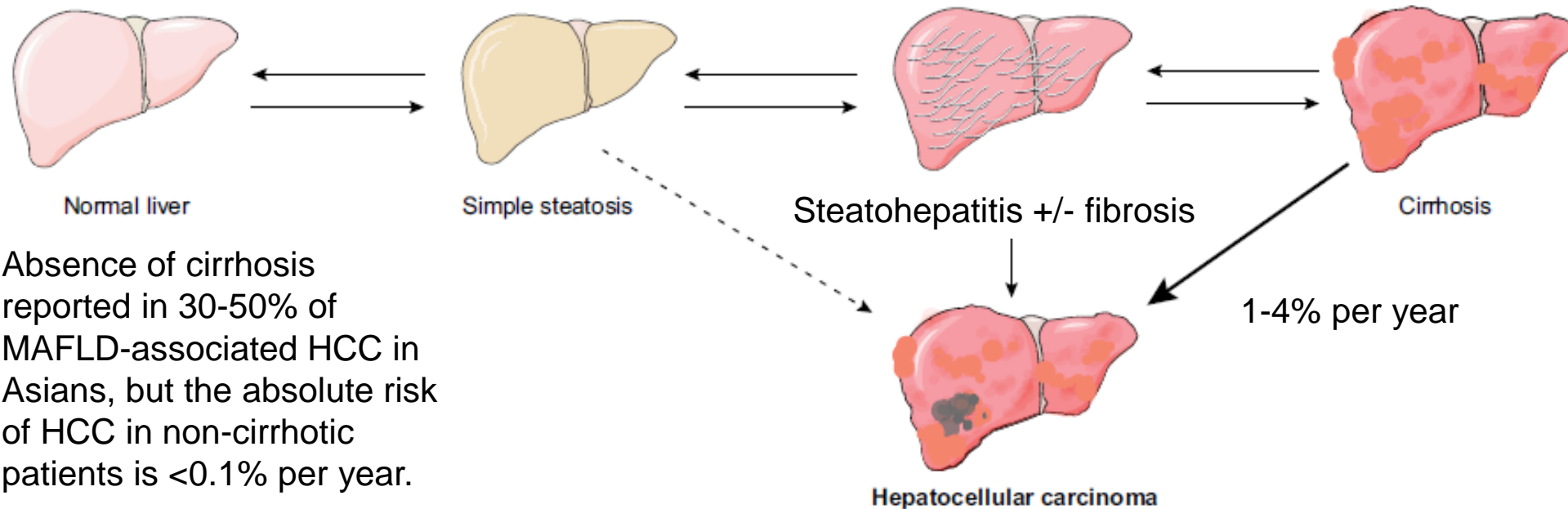


Natural history of MAFLD

Annual incidence of MAFLD 3-4%.

25% progress from simple steatosis to steatohepatitis and have fibrosis progression in 3 years.

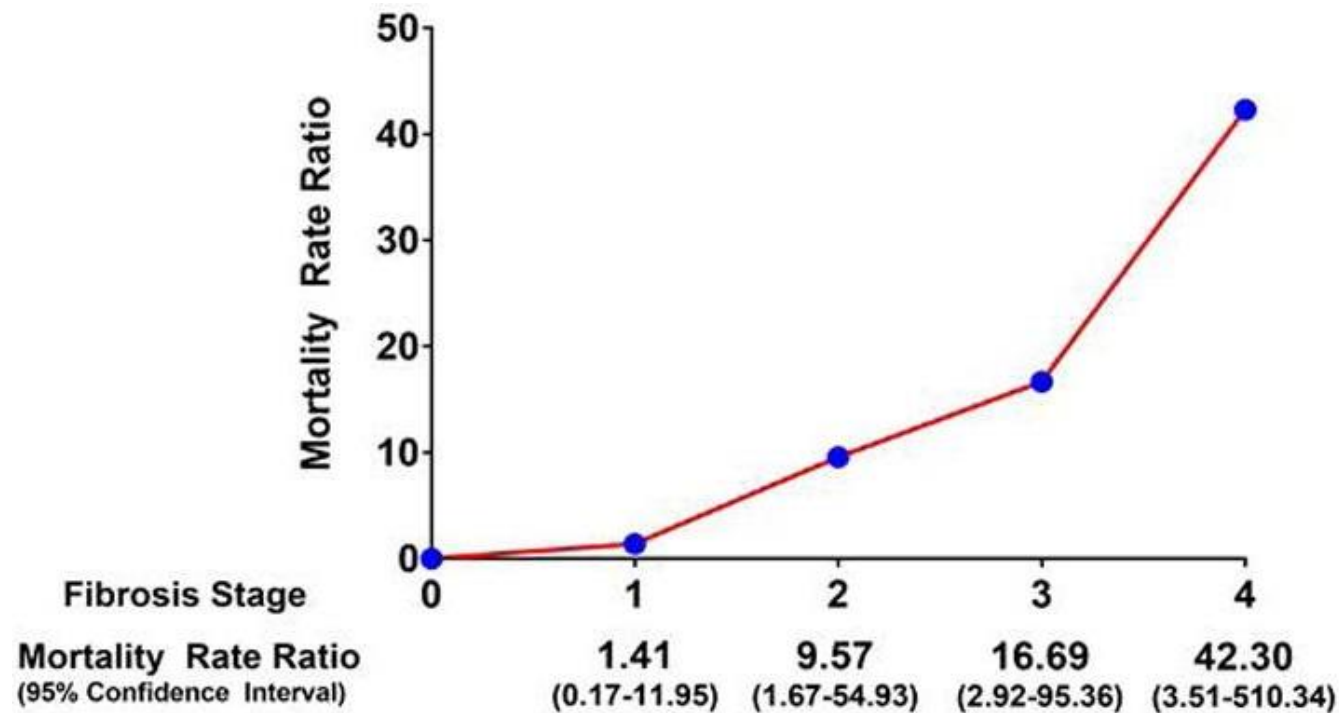
Fibrosis progression 1 stage in 7 years in patients with steatohepatitis; 1 stage in 14 years in patients with simple steatosis.



Absence of cirrhosis reported in 30-50% of MAFLD-associated HCC in Asians, but the absolute risk of HCC in non-cirrhotic patients is <0.1% per year.



Fibrosis stage is the single most important predictor of death due to liver disease

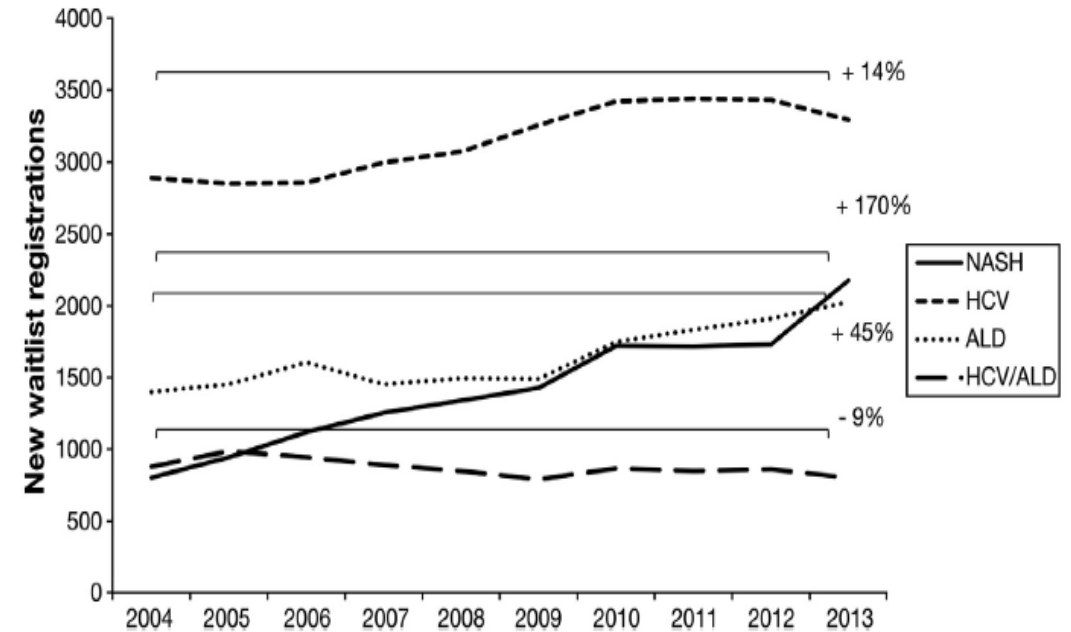


Dulai, et al. Hepatology 2017.



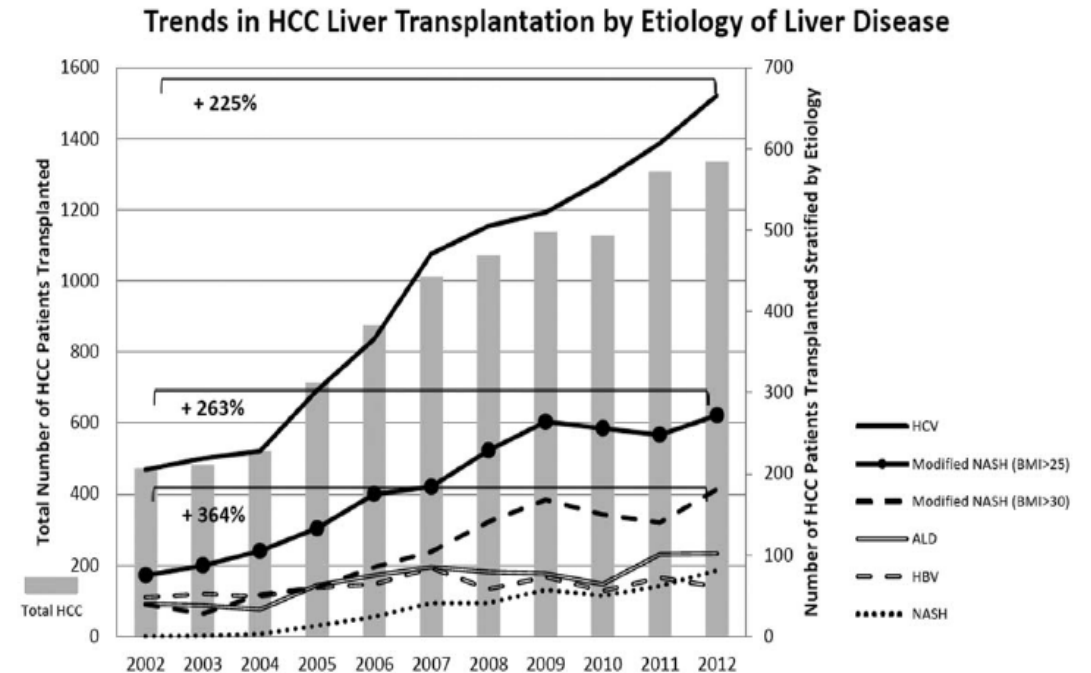
Burden of NAFLD

- NASH demonstrated the **greatest increase** and became the **second leading etiology of chronic liver disease among new liver transplant waitlist registrations in the United States.**



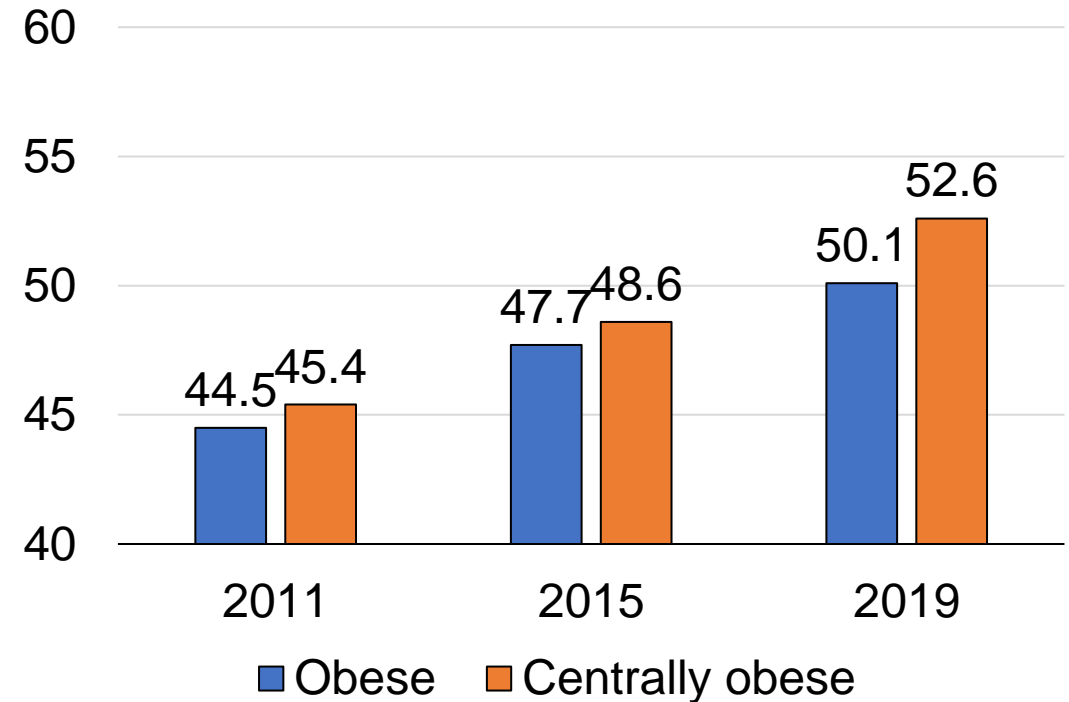
Burden of NAFLD

- NASH is the **second leading etiology of HCC leading to liver transplantation** and is the **most rapidly growing indication for liver transplantation in patients with HCC in the United States.**



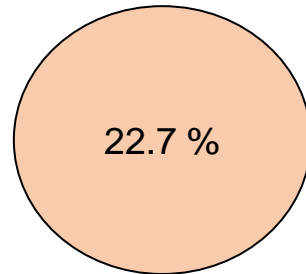
Obesity in Malaysia

- 1 in 2 adult Malaysians are obese
- 1 in 2 adults Malaysians are centrally obese



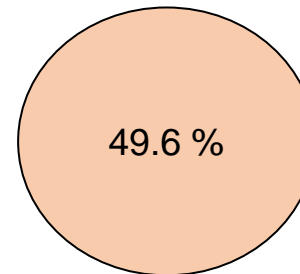
Prevalence of NAFLD in Malaysia

Health-check individuals



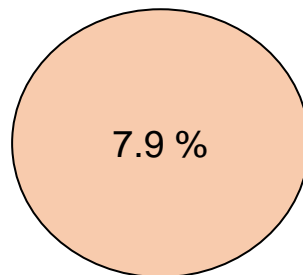
Goh SC, et al. Hepatol Int 2013.

Patients with diabetes mellitus



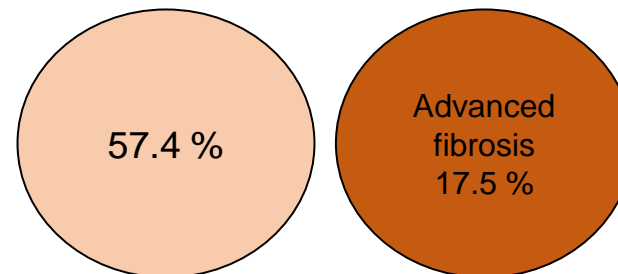
Chan WK, et al. J Gastroenterol Hepatol 2013.

Young adults



Chan WK, et al. Hepatol Int 2014.

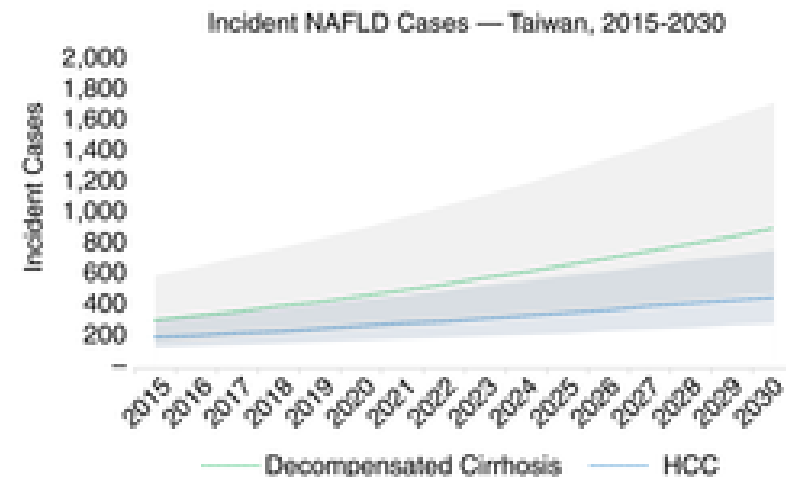
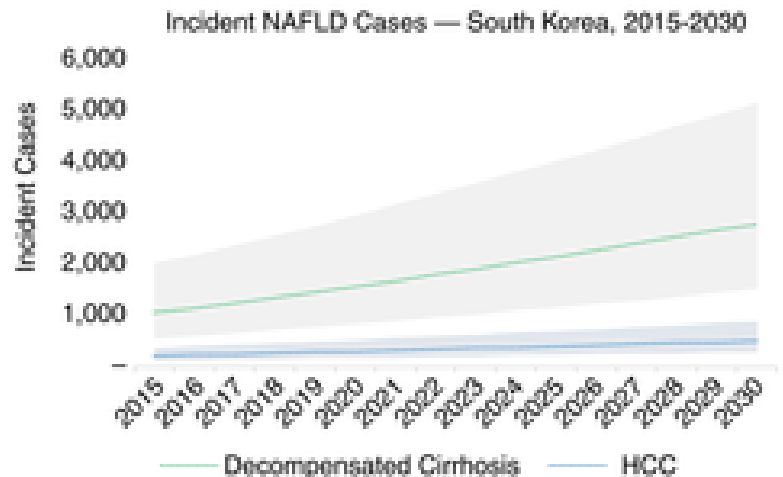
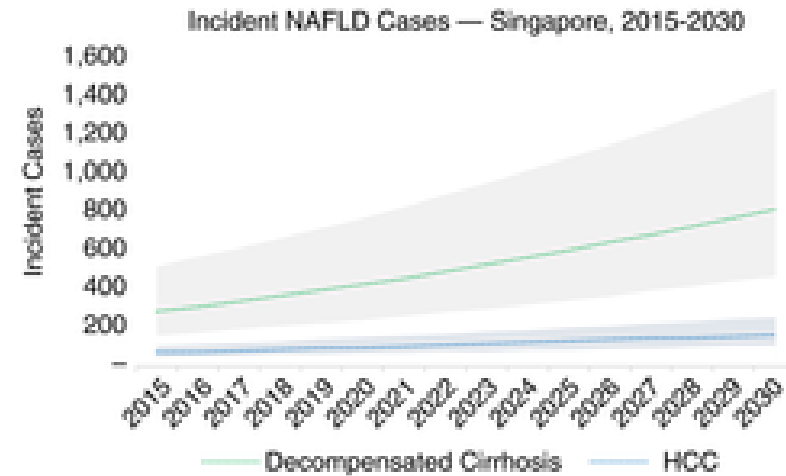
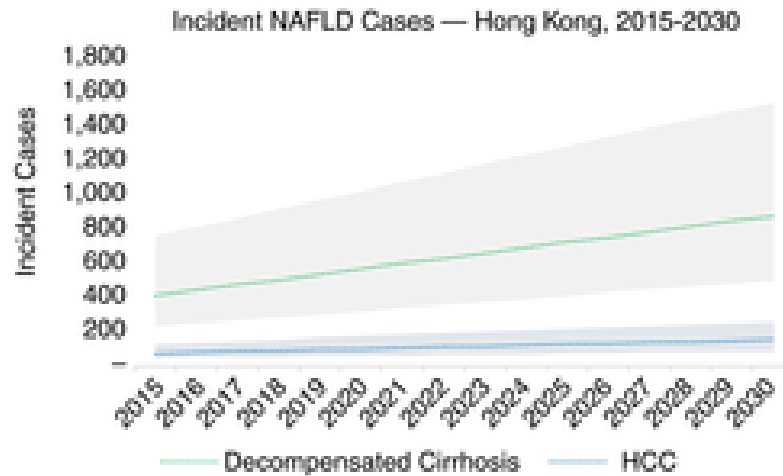
Health-check individuals, using Fibroscan



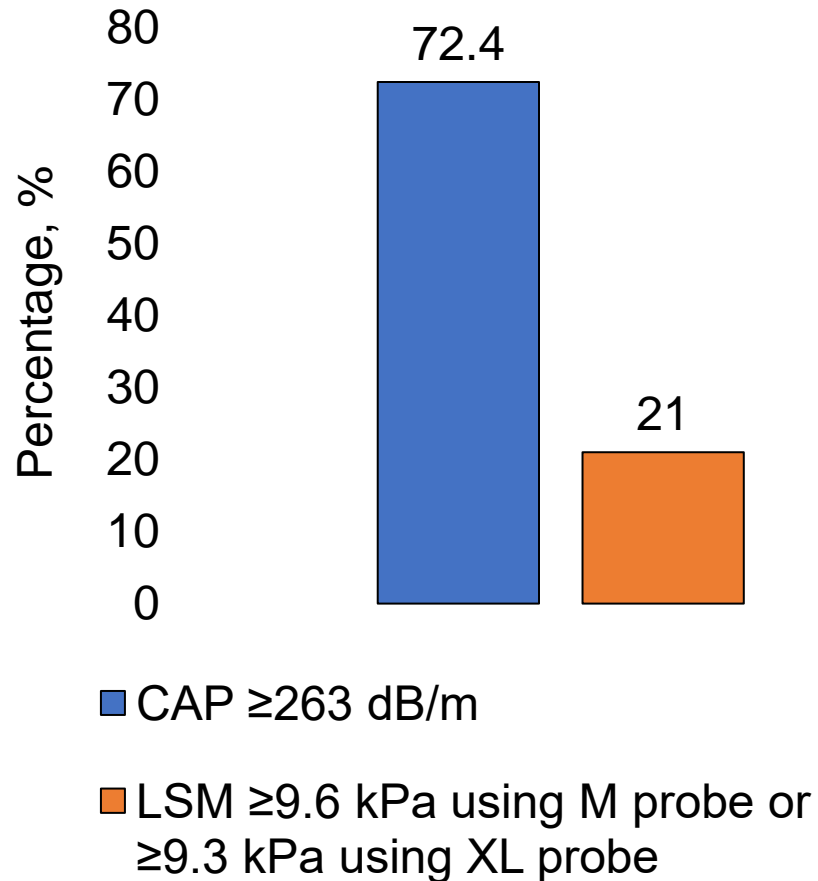
Tan EC, et al. JGH Open 2018.



Lag in liver-related complications



NAFLD in patients with DM



- Among patients with LSM ≥ 8 kPa who underwent liver biopsy:
- Majority had NASH (83.1%) and some degree of fibrosis (87.3%)
- 36.6% had advanced fibrosis



Conclusion

- MAFLD is the liver manifestation of the metabolic syndrome.
- Its prevalence is increasing due to increasing prevalence of obesity.
- While cardiovascular disease is the leading cause of mortality, MAFLD patients with more severe liver disease are at increased risk of liver-related complications and mortality.
- MAFLD is highly prevalent in patients with diabetes who are at increased risk for more severe liver disease.

