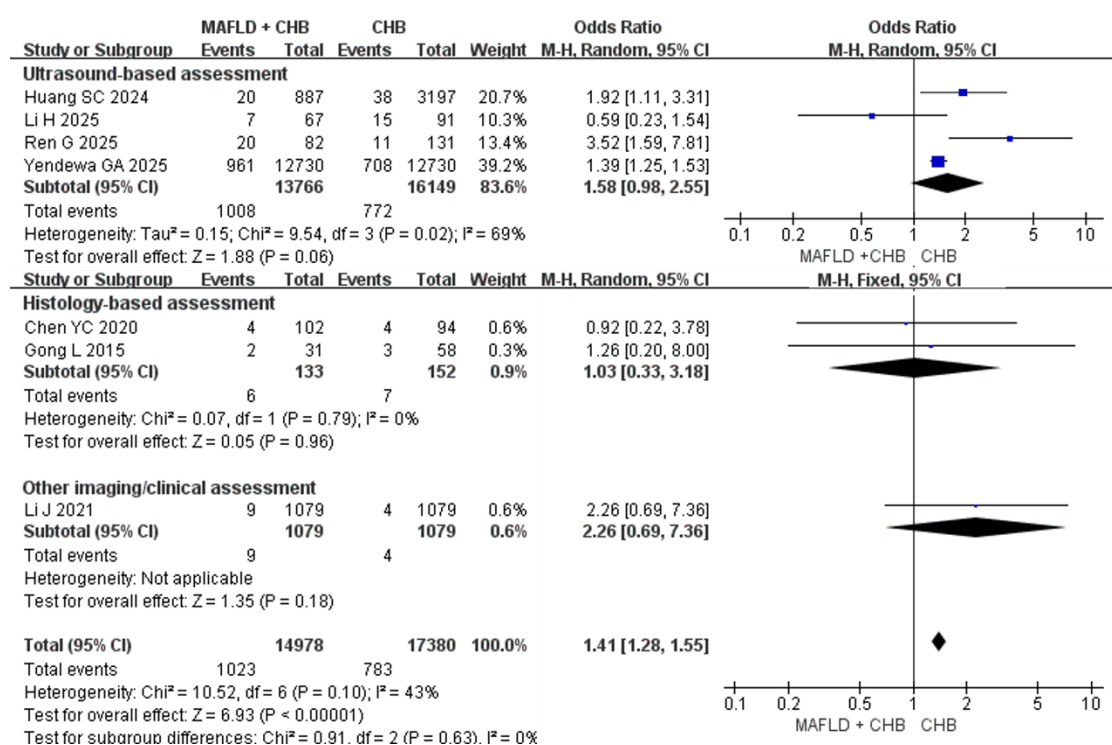
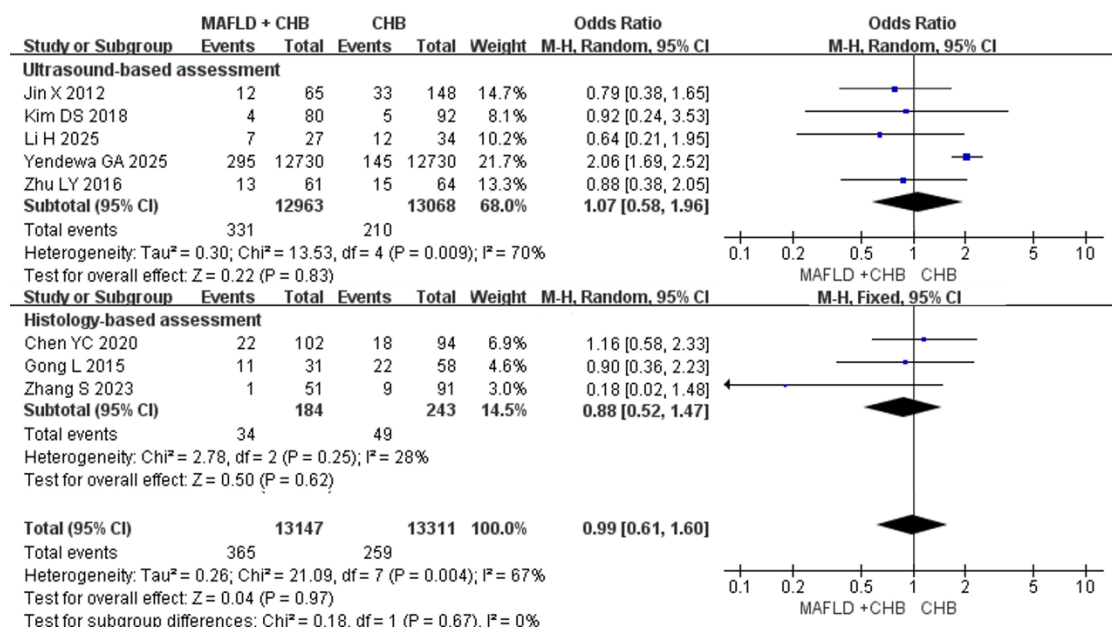


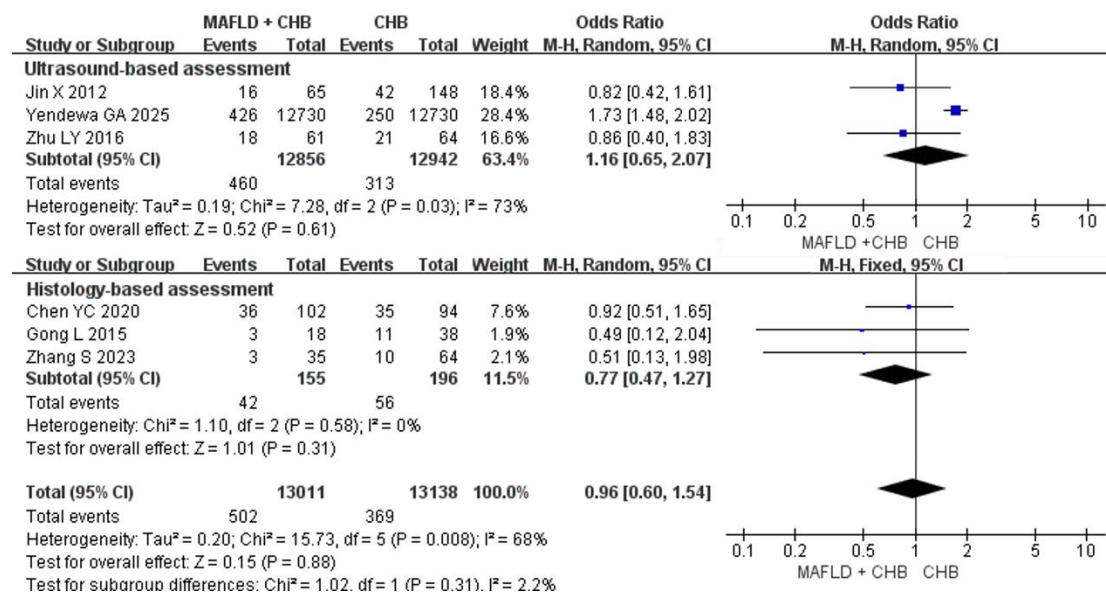


Supplementary Figure 1 Forest plot of subgroup analysis according to metabolic dysfunction-associated fatty liver disease diagnostic approach for hepatitis B surface antigen seroclearance at 48 weeks. Pooled effects are expressed as odds ratios with 95% CIs.

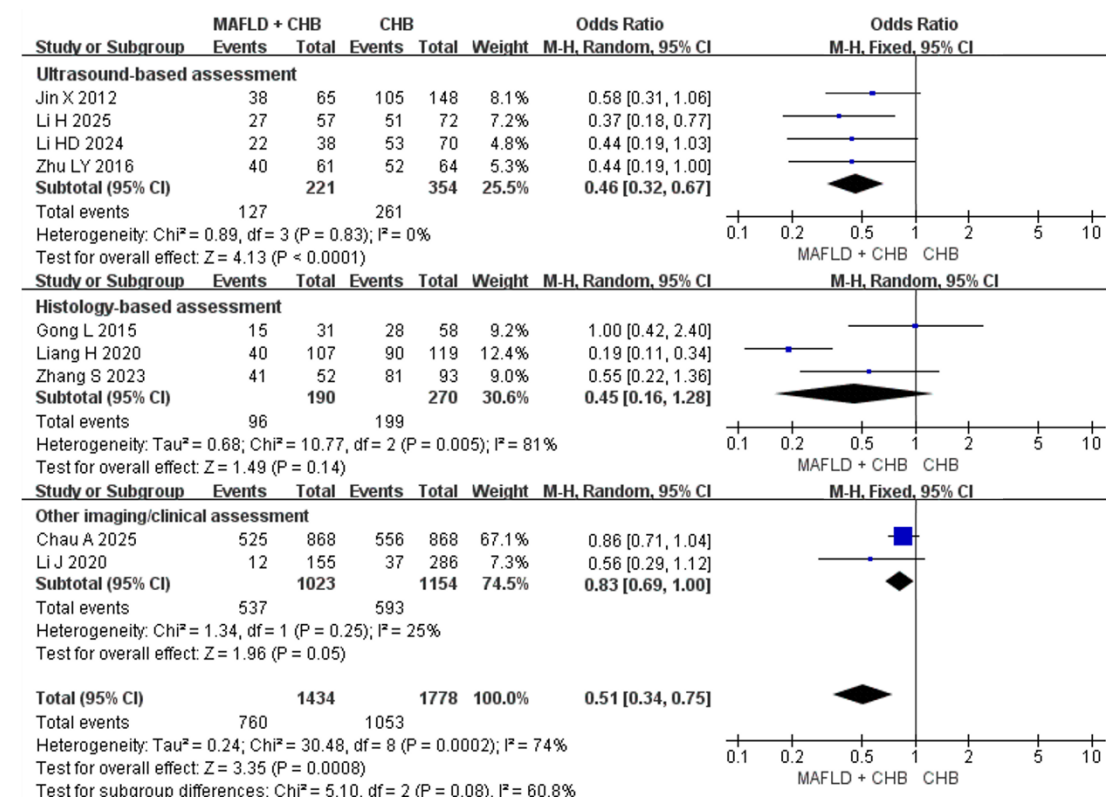


Supplementary Figure 2 Forest plot of subgroup analysis according to metabolic dysfunction-associated fatty liver disease diagnostic approach for hepatitis B e

antigen seroclearance at 48 weeks. Pooled effects are expressed as odds ratios with 95% CIs.

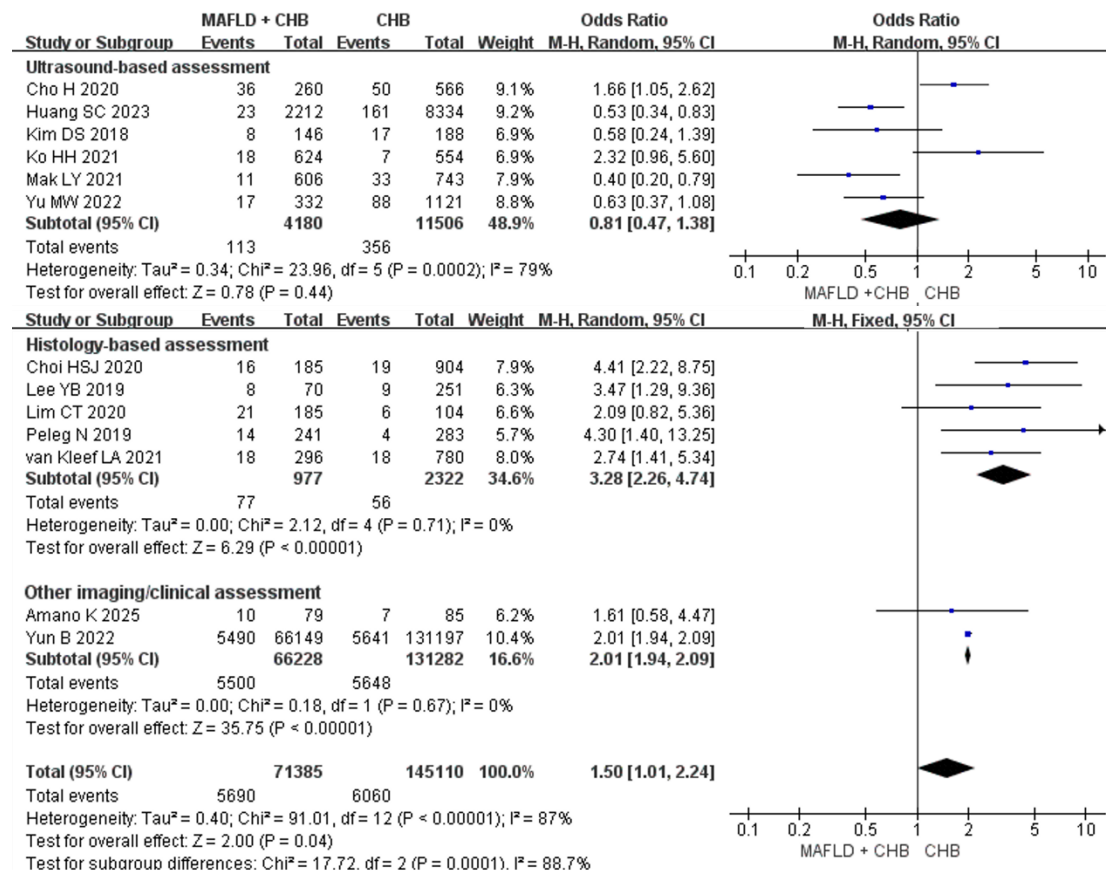


Supplementary Figure 3 Forest plot of subgroup analysis according to metabolic dysfunction-associated fatty liver disease diagnostic approach for hepatitis B e antigen seroclearance at 96 weeks. Pooled effects are expressed as odds ratios with 95% CIs.

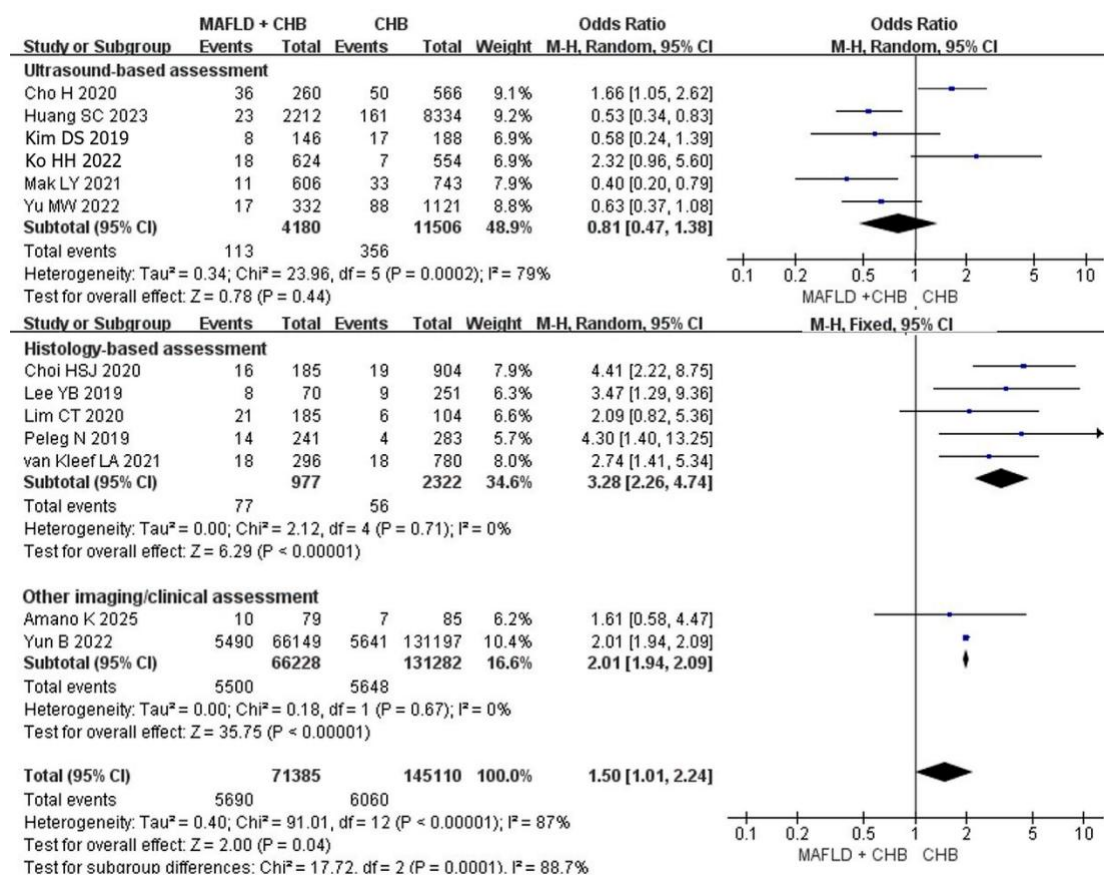


Supplementary Figure 4 Forest plot of subgroup analysis according to metabolic

dysfunction-associated fatty liver disease diagnostic approach for alanine aminotransferase normalization at 48 weeks. Pooled effects are expressed as odds ratios with 95% CIs.



Supplementary Figure 5 Forest plot of subgroup analysis according to metabolic dysfunction-associated fatty liver disease diagnostic approach for hepatitis B virus DNA clearance at 48 weeks. Pooled effects are expressed as odds ratios with 95% CIs.



Supplementary Figure 6 Forest plot of subgroup analysis according to metabolic dysfunction-associated fatty liver disease diagnostic approach for hepatocellular carcinoma risk. Pooled effects are expressed as odds ratios with 95% CIs.

Supplementary Table 1 Detailed search strategies for all databases

Database	Search strategy	Date
PubMed	(((("Hepatitis B, Chronic"[Mesh] OR "chronic hepatitis B"[tiab] OR "HBV"[tiab] OR "hepatitis B virus"[tiab])) AND (("Fatty Liver"[Mesh] OR "Non-alcoholic Fatty Liver Disease"[Mesh] OR "Steatohepatitis"[Mesh] OR MAFLD[tiab] OR "metabolic dysfunction-associated fatty liver"[tiab] OR MASLD[tiab] OR "metabolic dysfunction-associated steatotic liver disease"[tiab] OR NAFLD[tiab] OR "nonalcoholic fatty liver"[tiab] OR "non-alcoholic fatty liver"[tiab] OR "hepatic steatosis"[tiab] OR steatosis[tiab] OR NASH[tiab]))) AND (("Antiviral Agents"[Mesh] OR entecavir[tiab]	30 Novem ber 2025

	OR ETV[tiab] OR tenofovir[tiab] OR "tenofovir disoproxil fumarate"[tiab] OR TDF[tiab] OR "tenofovir alafenamide"[tiab] OR TAF[tiab] OR lamivudine[tiab] OR adefovir[tiab] OR telbivudine[tiab] OR interferon[tiab] OR peginterferon[tiab] OR "nucleos(t)ide analog*[tiab] OR "nucleoside analog*[tiab] OR "nucleotide analog*[tiab]))	
Web of Science Core Collection	#1 Hepatitis B, Chronic (Topic) or Hepatitis B Virus Infection, Chronic (Topic) or Chronic Hepatitis B (Topic) or CHB (Topic) or Hepatitis B (Topic) or HBV (Topic) or Hepatitis B viruses (Topic) #2 metabolic dysfunction-associated fatty liver (Topic) or metabolic dysfunction-associated steatotic liver disease (Topic) or nonalcoholic fatty liver (Topic) or non-alcoholic fatty liver (Topic) or steatosis (Topic) or hepatic steatosis (Topic) or MAFLD (Topic) or MASLD (Topic) or FAFLD (Topic) or NASH (Topic) or MASH (Topic) #3 entecavir (Topic) or ETV (Topic) or tenofovir (Topic) or tenofovir disoproxil fumarate (Topic) or peginterferon (Topic) or TDF (Topic) or TAF (Topic) or nucleos* analog* (Topic) or interferon (Topic) or lamivudine (Topic) or adefovir (Topic) or telbivudine (Topic) or nucleos(t)ide analog* (Topic) or nucleoside analog (Topic) or Antiviral Agents (Topic) #1AND #2 AND #3	30 Novem ber 2025
EMBASE	('chronic hepatitis b'/exp OR 'chronic hepatitis b':ab,ti OR 'hepatitis b virus':ab,ti OR 'HBV':ab,ti) AND ('metabolic dysfunction associated fatty liver disease'/exp OR 'metabolic dysfunction-associated fatty liver disease':ab,ti OR 'MAFLD':ab,ti OR 'nonalcoholic fatty liver disease':ab,ti OR 'NAFLD':ab,ti OR 'fatty liver':ab,ti OR 'hepatic steatosis':ab,ti) AND ('antiviral agent'/exp OR 'antiviral therapy':ab,ti OR 'antiviral treatment':ab,ti OR 'entecavir':ab,ti OR 'tenofovir':ab,ti OR 'nucleos(t)ide analogue':ab,ti)	30 Novem ber 2025
Cochrane	#1 ((chronic hepatitis B OR HBV OR hepatitis B virus)):ti,ab,kw #2	30

Library ((antiviral therapy OR antiviral treatment OR entecavir OR tenofovir OR nucleos(t)ide analogue OR NA therapy)):ti,ab,kw #3 ((metabolic dysfunction-associated fatty liver disease OR MAFLD OR nonalcoholic fatty liver disease OR NAFLD OR fatty liver OR hepatic steatosis)):ti,ab,kw #1 AND #2 AND #3

Supplementary Table 2 List of excluded full-text articles and reasons for exclusion

No.	Ref.	Title	Reason for exclusion
1	Tang Y (2023)	Impact of nonalcoholic fatty liver disease status change on antiviral efficacy of nucleos(t)ide analogues in HBeAg-positive chronic hepatitis B	Lack of relevant data: The study grouped patients by dynamic NAFLD status change rather than baseline MAFLD/steatosis status.
2	Atalay (2022)	R Does Hepatic Steatosis Influence the Virological Response with Chronic Hepatitis B Patients Treated with Entecavir or Tenofovir Disoproxil Fumarate?	Lack of relevant data: The study did not provide extractable event data stratified by hepatic steatosis status.
3	Ceylan (2016)	B Impact of fatty liver on hepatitis B virus replication and virologic response to tenofovir and entecavir	Lack of relevant data: The study did not provide extractable data for the prespecified outcomes and time points.
4	Janczura (2025)	J Steatotic liver disease in patients treated for chronic hepatitis B	Irrelevant literature: The study included broader steatotic liver disease categories and did not provide eligible data for the planned comparison.
5	Cindoruk (2007)	M Hepatic steatosis has no impact on the outcome of treatment in patients with chronic hepatitis B infection	Lack of relevant data: The study reported a composite sustained virological response rather than separate prespecified outcomes.
6	Poortahmasebi	Hepatic Steatosis: Prevalence and	Irrelevant literature: The study evaluated

	V (2014)	Host/Viral Risk Factors in Iranian Patients with Chronic Hepatitis B Infection	risk factors for hepatic steatosis but not antiviral response or long-term outcomes.
7	Shi JP (2008)	Viral and host causes of hepatosteatosi s in Chinese patients with chronic hepatitis B	Irrelevant literature: The study focused on viral and host factors associated with hepatosteatosi s, without treatment or clinical outcome data.
8	Lesmana LA (2012)	Prevalence of hepatic steatosis in chronic hepatitis B patients and its association with disease severity.	Irrelevant literature: The study assessed steatosis prevalence and disease severity, without treatment-response or long-term outcome data.
9	Yoon JS (2020)	Prognostic impact of concurrent nonalcoholic fatty liver disease in patients with chronic hepatitis B-related hepatocellular carcinoma	Irrelevant literature: The study evaluated prognosis after HCC diagnosis rather than HCC occurrence in patients with CHB.
10	Chan AW (2017)	Concurrent fatty liver increases risk of hepatocellular carcinoma among patients with chronic hepatitis B	Lack of relevant data: The study did not provide separately extractable HCC data for patients receiving antiviral therapy.
11	Mak LY (2021)	Reduced hepatic steatosis is associated with higher risk of hepatocellular carcinoma in chronic hepatitis B infection	Lack of relevant data: The study did not provide separately extractable HCC data for patients receiving antiviral therapy.
12	Enomoto H (2016)	Relationship Between Hepatic Steatosis and the Elevation of Aminotransferases in HBV-Infected Patients With Hbe-Antigen Negativity and a Low Viral Load	Irrelevant literature: The study evaluated aminotransferase elevation in untreated HBeAg-negative patients, without antiviral-response or long-term outcome data.

13	Chen (2018)	XL	Relations of hepatic steatosis with liver functions, inflammations, glucolipid metabolism in chronic hepatitis B patients	Irrelevant literature: The study evaluated aminotransferase elevation in untreated HBeAg-negative patients, without antiviral-response or long-term outcome data.
14	Chen L (2022)		Study on the relationship between nonalcoholic fatty liver disease and hepatocellular carcinoma in patients with prior hepatitis B virus infection	Irrelevant literature: The study evaluated HCC in patients with prior HBV infection rather than chronic hepatitis B.
15	Shi JP (2012)		Impact of liver steatosis on antiviral effects of pegylated interferon-alpha in patients with chronic hepatitis B	Lack of relevant data: The Chinese-language study evaluated PegIFN- α response, but did not provide extractable data for the prespecified outcomes and time points.
16	Cho EJ (2011)		Relative etiological role of prior hepatitis B virus infection and nonalcoholic fatty liver disease in the development of non-B non-C hepatocellular carcinoma in a hepatitis B-endemic area	Irrelevant literature: The study evaluated non-B non-C HCC related to prior HBV infection and NAFLD, rather than CHB patients with or without MAFLD.
17	Pirvulescu (2011)	I	The influence and prevalence of nonalcoholic steatohepatitis in chronic hepatitis B	Unavailability of full text: The full text could not be obtained from PubMed or available database sources.
18	Chen (2021)	YC	Advanced Liver Fibrosis Is Associated with Necroinflammatory Grade but Not Hepatic Steatosis in Chronic Hepatitis B Patients	Irrelevant literature: The study evaluated fibrosis and necroinflammation rather than antiviral-response or long-term outcome data.
19	Huang (2022)	Y	Application of Fatty Liver Inhibition of Progression Algorithm and	Irrelevant literature: The study assessed untreated CHB patients and focused on

Steatosis, Activity, and Fibrosis Score histological assessment rather than to Assess the Impact of Non-Alcoholic antiviral-response or long-term outcome Fatty Liver on Untreated Chronic data.

Hepatitis B Patients

- 20 Wu L (2024) Interferon- α could induce liver steatosis to promote HBsAg loss by increasing triglyceride level Lack of relevant data: The study evaluated treatment-induced steatosis rather than baseline MAFLD/steatosis status.
- 21 Chang XJ (2021) Influence of weight management on the prognosis of steatohepatitis in chronic hepatitis B patients during antiviral treatment. Lack of relevant data: The study focused on NASH and weight management during antiviral therapy, without extractable baseline MAFLD/steatosis comparison data.
- 22 Xu L (2015) Impact of liver steatosis on the curative effect of pegylated interferon-alpha-2a in patients with chronic hepatitis B Lack of relevant data: The Chinese-language study evaluated PegIFN- α -2a response, but extractable data for the prespecified outcomes were insufficient.
- 23 Hu D (2024) The efficacy of antiviral treatment in chronic hepatitis B patients with hepatic steatosis. Lack of relevant data: The study evaluated antiviral treatment among CHB patients with hepatic steatosis, without a directly extractable CHB without steatosis comparator for the planned analysis.
- 24 Tan YW (2023) Baseline hepatocyte ballooning is a risk factor for adverse events in patients with chronic hepatitis B complicated with nonalcoholic fatty liver disease. Lack of relevant data: The study focused on histological features within CHB patients with NAFLD, without an eligible CHB without MAFLD comparator.
- 25 Peng D (2008) Hepatic steatosis in chronic hepatitis B patients is associated with metabolic factors more than viral factors Irrelevant literature: The study evaluated metabolic and viral factors associated with hepatic steatosis, without antiviral-

				response or long-term outcome data.
26	Rastogi (2011)	A	Steatosis in chronic hepatitis B: prevalence and correlation with biochemical, histologic, viral, and metabolic parameters	Unavailability of full text: PubMed record was available, but the full text could not be obtained for eligibility assessment.
27	Minakari (2009)	M	Liver steatosis in patients with chronic hepatitis B infection: host and viral risk factors	Lack of relevant data: The study evaluated host and viral risk factors for liver steatosis, without antiviral-response or long-term outcome data.
28	Sefa Sayar (2023)	M	Evaluation of hepatosteatosi s in patients with chronic hepatitis B virus infection	Lack of relevant data: The study evaluated hepatosteatosi s frequency and associated factors in untreated CHB patients, without antiviral-response or long-term outcome data.
29	Liang J (2017)	A	Noninvasive Score Model for Prediction of NASH in Patients with Chronic Hepatitis B and Nonalcoholic Fatty Liver Disease	Lack of relevant data: The study developed a diagnostic model for NASH in CHB with NAFLD, without an eligible CHB without NAFLD comparator or outcome data.
30	Ben Trabelsi (2013)	Slama A	Hepatic steatosis in chronic hepatitis B: prevalence, risk factors, and impact on fibrosis and therapeutic response	Unavailability of full text: The abstract was available, but the full text could not be obtained for eligibility assessment and data extraction.
