

World Journal of *Hepatology*

World J Hepatol 2024 May 27; 16(5): 661-862



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ABOUT COVER

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AIMS AND SCOPE

The primary aim of *World Journal of Hepatology* (*WJH*, *World J Hepatol*) is to provide scholars and readers from various fields of hepatology with a platform to publish high-quality basic and clinical research articles and communicate their research findings online.

WJH mainly publishes articles reporting research results and findings obtained in the field of hepatology and covering a wide range of topics including chronic cholestatic liver diseases, cirrhosis and its complications, clinical alcoholic liver disease, drug induced liver disease autoimmune, fatty liver disease, genetic and pediatric liver diseases, hepatocellular carcinoma, hepatic stellate cells and fibrosis, liver immunology, liver regeneration, hepatic surgery, liver transplantation, biliary tract pathophysiology, non-invasive markers of liver fibrosis, viral hepatitis.

INDEXING/ABSTRACTING

The *WJH* is now abstracted and indexed in PubMed, PubMed Central, Emerging Sources Citation Index (ESCI), Scopus, Reference Citation Analysis, China Science and Technology Journal Database, and Superstar Journals Database. The 2023 Edition of Journal Citation Reports® cites the 2022 impact factor (IF) for *WJH* as 2.4.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: Yi-Xuan Cai, Production Department Director: Xiang Li, Cover Editor: Xiang Li.

NAME OF JOURNAL

World Journal of Hepatology

ISSN

ISSN 1948-5182 (online)

LAUNCH DATE

October 31, 2009

FREQUENCY

Monthly

EDITORS-IN-CHIEF

Nikolaos Pyrsopoulos, Ke-Qin Hu, Koo Jeong Kang

EXECUTIVE ASSOCIATE EDITORS-IN-CHIEF

Shuang-Suo Dang

EDITORIAL BOARD MEMBERS

<https://www.wjgnet.com/1948-5182/editorialboard.htm>

PUBLICATION DATE

May 27, 2024

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PUBLISHING PARTNER

Department of Infectious Diseases, the Second Affiliated Hospital of Xi'an Jiaotong University

INSTRUCTIONS TO AUTHORS

<https://www.wjgnet.com/bpg/gerinfo/204>

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<https://www.wjgnet.com/bpg/gerinfo/208>

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<https://www.wjgnet.com/bpg/GerInfo/310>

ARTICLE PROCESSING CHARGE

<https://www.wjgnet.com/bpg/gerinfo/242>

STEPS FOR SUBMITTING MANUSCRIPTS

<https://www.wjgnet.com/bpg/GerInfo/239>

ONLINE SUBMISSION

<https://www.f6publishing.com>

PUBLISHING PARTNER's OFFICIAL WEBSITE

http://2yuan.xjtu.edu.cn/Html/Departments/Main/Index_21148.html



Gestational diabetes mellitus may predispose to metabolic dysfunction-associated steatotic liver disease

Charalampos Milionis, Ioannis Ilias, Eftychia Koukkou

Specialty type: Endocrinology and metabolism

Provenance and peer review: Unsolicited article; Externally peer reviewed.

Peer-review model: Single blind

Peer-review report's classification

Scientific Quality: Grade C

Novelty: Grade B

Creativity or Innovation: Grade B

Scientific Significance: Grade B

P-Reviewer: Soldera J, Brazil

Received: January 29, 2024

Revised: February 29, 2024

Accepted: April 9, 2024

Published online: May 27, 2024



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Abstract

The development of type 2 diabetes mellitus is a major contributing factor to the worldwide health burden of metabolic dysfunction-associated steatotic liver disease (MASLD). Insulin resistance, subclinical inflammation, dyslipidemia, obesity, and hypertension are all factors in this reciprocal interaction that contribute to the development of MASLD, which includes hepatocellular carcinoma, advanced fibrosis/cirrhosis, and non-alcoholic steatohepatitis (NASH). A new risk factor for MASLD/NASH that affects the course of the disease independently throughout life is gestational diabetes mellitus (GDM). Women with a history of GDM had a higher chance of developing NASH, according to a recent study that used a large-scale database. Although the precise etiology is yet unknown, temporary disruption of pancreatic beta cell activity during pregnancy may set off systemic inflammation, affecting distant organs including the liver. Early screening and management strategies are crucial in mitigating MASLD progression and preventing adverse cardiovascular events in affected individuals.

Key Words: Metabolic dysfunction-associated steatotic liver disease; Type 2 diabetes mellitus; Non-alcoholic steatohepatitis; Gestational diabetes mellitus; Cardiovascular disease

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Core Tip: A recent large-scale study inculcates gestational diabetes mellitus (GDM) as a novel risk factor for metabolic dysfunction-associated steatotic liver disease (MASLD). The impact of GDM on disease progression is exerted throughout life. Early screening and management strategies are crucial in mitigating MASLD progression and preventing adverse cardiovascular events in affected individuals.

Citation: Milionis C, Ilias I, Koukkou E. Gestational diabetes mellitus may predispose to metabolic dysfunction-associated steatotic liver disease. *World J Hepatol* 2024; 16(5): 860-862

URL: <https://www.wjgnet.com/1948-5182/full/v16/i5/860.htm>

DOI: <https://dx.doi.org/10.4254/wjh.v16.i5.860>

TO THE EDITOR

In a recent comprehensive review published in this journal, the authors provided an extensive analysis of metabolic dysfunction-associated steatotic liver disease (MASLD), recognized as the most prevalent liver disorder globally[1]. Type 2 diabetes mellitus (DM2) emerges as a pivotal factor in the progression of non-alcoholic steatohepatitis (NASH)/metabolic dysfunction-associated steatohepatitis (MASH) to advanced liver fibrosis/cirrhosis and hepatocellular carcinoma, as well as a contributor to liver-related mortality. The intricate relationship between MASLD and DM2 involves bidirectional influences, with insulin resistance and subclinical inflammation playing pivotal roles in MASLD pathogenesis. Dyslipidemia in MASLD manifests through impaired lipid uptake, enhanced de novo lipogenesis, and altered lipid export, culminating in abnormal plasma lipoprotein profiles associated with atherosclerosis. Additionally, obesity significantly exacerbates MASLD by inciting intrahepatic inflammation and fibrosis, thereby increasing the risk of cirrhosis and neoplasia. The prevalence of hypertension in MASLD patients underscores its association with systemic inflammation, insulin resistance, lipid deposition, elevated homocysteine levels, and intestinal dysbiosis. Notably, cardiovascular disease stands as the leading cause of mortality in MASLD patients, with risk factors intricately linked to metabolic syndrome (MetS). Early screening for these comorbidities is imperative for disease management and preventing cardiovascular events in MASLD patients.

Expanding upon the established contributors to MASLD/NASH, we propose the inclusion of gestational diabetes mellitus (GDM), affecting at least 5% of pregnancies worldwide (and potentially up to one-third of pregnancies)[2,3]. A recent study investigated the association between a history of GDM and the lifelong development of NASH, while controlling for the influence of DM2[4], using the validated Explorys database (formerly IBM Watson, now Merative, Ann Arbor, MI, United States), which encompasses data from over 360 hospitals. The researchers categorized adult females into those with NASH [coded by Systematized Nomenclature of Medicine Clinical Terms (SNOMED-CT) as 442685003] and those without. Regression analysis was performed to adjust for potential confounding factors. Among 70632640 individuals aged 18 years and above screened in the database, 36550 women were diagnosed with NASH and were compared to 38556480 women without NASH. Significantly more women with NASH were Caucasian [odds ratio (OR): 2.13] and/or obese (OR: 4.83). Furthermore, women with NASH were more likely to have had a medical history of GDM (OR: 1.23) or had received a diagnosis of DM2 (OR: 4.52), hyperlipidemia (OR: 2.59), MetS (OR: 3.07), polycystic ovary disease (OR: 1.72) or hypothyroidism (OR: 1.59)[4]. Notably, NASH prevalence was higher among middle-aged women (35-44 years old) with a history of GDM, while in women without GDM, NASH was more prevalent among those aged 65 and above (Figure 1).

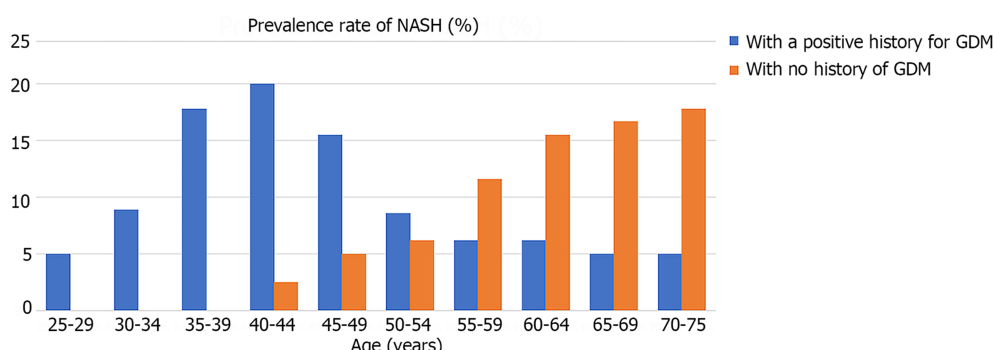


Figure 1 Prevalence rate of non-alcoholic steatohepatitis according to history of gestational diabetes mellitus. Redrawn with data from Boustany *et al*[4]. NASH: Non-alcoholic steatohepatitis; GDM: Gestational diabetes mellitus.

These findings above underscore the increased risk of NASH development throughout life in women with a history of GDM, independently of other potential confounders. However, the study's methodology regarding subjects diagnosed

with non-alcoholic fatty liver disease (SNOMED code: 197315008) remains unclear. Additionally, the study's limitations include possible data entry bias and the potential for outcome/diagnosis overestimation due to the extensive database size. While the precise pathogenesis remains elusive, the authors postulated that during pregnancy, transient dysfunction of the pancreatic beta cells might trigger the extensive release of mediators of inflammation, subsequently impacting adjacent and remote organs, including the liver[4].

Thus, the inclusion of GDM as a contributing factor unveils a novel dimension and enriches the comprehensive overview of MASLD recently published[1].

FOOTNOTES

Author contributions: Milionis C, Ilias I, and Koukkou E conceived and designed this work. Milionis C, Ilias I, and Koukkou E researched the literature; Milionis C, Ilias I, and Koukkou E wrote the manuscript; Milionis C, Ilias I, and Koukkou E have read and approved the final manuscript.

Conflict-of-interest statement: All authors have no conflicts of interest to disclose.

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S-Editor: Liu JH

L-Editor: A

P-Editor: Cai YX

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