

# World Journal of *Diabetes*

*World J Diabetes* 2024 July 15; 15(7): 1384-1653



**EDITORIAL**

- 1384 Remission of type 2 diabetes mellitus  
*Nakhleh A, Halfin E, Shehadeh N*
- 1390 Diabetes remission and nonalcoholic fatty pancreas disease  
*Wu WJ*
- 1394 Management of gestational diabetes mellitus *via* nutritional interventions: The relevance of gastric emptying  
*Huang WK, Jalleh RJ, Rayner CK, Wu TZ*
- 1398 MicroRNA-630: A promising avenue for alleviating inflammation in diabetic kidney disease  
*Donate-Correa J, González-Luis A, Díaz-Vera J, Hernandez-Fernaud JR*
- 1404 Adiposity in Chinese people with type 1 diabetes  
*Wu NW, Lyu XF, An ZM, Li SY*
- 1409 Diabetes and tuberculosis: An emerging dual threat to healthcare  
*Shetty S, Pappachan JM, Fernandez CJ*

**REVIEW**

- 1417 Patient-centered care in diabetes care-concepts, relationships and practice  
*Chen TT, Su WC, Liu MI*
- 1430 Insulin resistance as the molecular link between diabetes and Alzheimer's disease  
*Abdalla MMI*

**MINIREVIEWS**

- 1448 Obstructive sleep apnea: Overlooked comorbidity in patients with diabetes  
*Tenda ED, Henrina J, Cha JH, Triono MR, Putri EA, Aristy DJ, Tahapary DL*
- 1461 Update on evidence-based clinical application of sodium-glucose cotransporter inhibitors: Insight to uncommon cardiovascular disease scenarios in diabetes  
*Tao SB, Lu X, Ye ZW, Tong NW*

**ORIGINAL ARTICLE****Retrospective Cohort Study**

- 1477 Association between glucose levels of children with type 1 diabetes and parental economic status in mobile health application

*Zhang WH, Wang CF, Wang H, Tang J, Zhang HQ, Zhu JY, Zheng XY, Luo SH, Ding Y*

**Retrospective Study**

- 1489 Association between glucose-lowering drugs and circulating insulin antibodies induced by insulin therapy in patients with type 2 diabetes

*Zhang P, Jiang Q, Ding B, Yan RN, Hu Y, Ma JH*

- 1499 Clinical efficacy of endovascular revascularization combined with vacuum-assisted closure for the treatment of diabetic foot

*Lei FR, Shen XF, Zhang C, Li XQ, Zhuang H, Sang HF*

- 1509 Magnetic resonance imaging combined with serum endolipin and galactaglobin-3 to diagnose cerebral infarction in the elderly with diabetes mellitus

*Zhang YH, Liang D*

- 1518 Dapagliflozin in heart failure and type 2 diabetes: Efficacy, cardiac and renal effects, safety

*Yu PL, Yu Y, Li S, Mu BC, Nan MH, Pang M*

**Observational Study**

- 1531 Cut-off value of glycated hemoglobin A1c for detecting diabetic retinopathy in the Chinese population

*Wen Y, Wang Q*

- 1537 Glymphatic function and its influencing factors in different glucose metabolism states

*Tian B, Zhao C, Liang JL, Zhang HT, Xu YF, Zheng HL, Zhou J, Gong JN, Lu ST, Zeng ZS*

**Clinical and Translational Research**

- 1551 Does type 1 diabetes serve as a protective factor against inflammatory bowel disease: A Mendelian randomization study

*Tong KK, Yu YF, Yang XY, Wu JY, Yu R, Tan CC*

- 1562 Network pharmacology and molecular dynamics study of the effect of the *Astragalus-Coptis* drug pair on diabetic kidney disease

*Zhang MY, Zheng SQ*

**Basic Study**

- 1589 Interactions between myoblasts and macrophages under high glucose milieu result in inflammatory response and impaired insulin sensitivity

*Luo W, Zhou Y, Wang LY, Ai L*

**SYSTEMATIC REVIEWS**

- 1603** Natural product-based treatment potential for type 2 diabetes mellitus and cardiovascular disease  
*Shrivastav D, Kumbhakar SK, Srivastava S, Singh DD*

**META-ANALYSIS**

- 1615** Evaluation of teplizumab's efficacy and safety in treatment of type 1 diabetes mellitus: A systematic review and meta-analysis  
*Ma XL, Ge D, Hu XJ*

**SCIENTOMETRICS**

- 1627** Global trends in publications regarding macrophages-related diabetic foot ulcers in the last two decades  
*Wen JP, Ou SJ, Liu JB, Zhang W, Qu YD, Li JX, Xia CL, Yang Y, Qi Y, Xu CP*

**LETTER TO THE EDITOR**

- 1645** Atrial fibrillation and prediabetes: A liaison that merits attention!  
*Batta A, Hatwal J*
- 1648** Serum tumor markers: Can they clinically implicate in type 2 diabetes mellitus?  
*Reddy KS, Pandiaraj IP, Gaur A, Varatharajan S*
- 1651** Bidirectional link between periodontitis and systemic inflammation in diabetic retinopathy  
*Nishant P, Sinha S, Sinha RK, Morya AK*

**ABOUT COVER**

Peer Review of *World Journal of Diabetes*, Erkan Gokce, MD, Professor, Department of Radiology, Tokat Gaziosmanpasa University, School of Medicine, Tokat 60100, Türkiye. drerkangokce@gmail.com

**AIMS AND SCOPE**

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

*WJD* mainly publishes articles reporting research results and findings obtained in the field of diabetes and covering a wide range of topics including risk factors for diabetes, diabetes complications, experimental diabetes mellitus, type 1 diabetes mellitus, type 2 diabetes mellitus, gestational diabetes, diabetic angiopathies, diabetic cardiomyopathies, diabetic coma, diabetic ketoacidosis, diabetic nephropathies, diabetic neuropathies, Donohue syndrome, fetal macrosomia, and prediabetic state.

**INDEXING/ABSTRACTING**

The *WJD* is now abstracted and indexed in Science Citation Index Expanded (SCIE, also known as SciSearch®), Current Contents/Clinical Medicine, Journal Citation Reports/Science Edition, PubMed, PubMed Central, Reference Citation Analysis, China Science and Technology Journal Database, and Superstar Journals Database. The 2024 Edition of Journal Citation Reports® cites the 2023 journal impact factor (JIF) for *WJD* as 4.2; JIF without journal self cites: 4.1; 5-year JIF: 4.2; JIF Rank: 40/186 in endocrinology and metabolism; JIF Quartile: Q1; and 5-year JIF Quartile: Q2.

**RESPONSIBLE EDITORS FOR THIS ISSUE**

Production Editor: *Yu-Xi Chen*; Production Department Director: *Xu Guo*; Cover Editor: *Jia-Ru Fan*.

**NAME OF JOURNAL**

*World Journal of Diabetes*

**ISSN**

ISSN 1948-9358 (online)

**LAUNCH DATE**

June 15, 2010

**FREQUENCY**

Monthly

**EDITORS-IN-CHIEF**

Lu Cai, Md. Shahidul Islam, Michael Horowitz

**EDITORIAL BOARD MEMBERS**

<https://www.wjgnet.com/1948-9358/editorialboard.htm>

**PUBLICATION DATE**

July 15, 2024

**COPYRIGHT**

© 2024 Baishideng Publishing Group Inc

**INSTRUCTIONS TO AUTHORS**

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

**GUIDELINES FOR ETHICS DOCUMENTS**

<https://www.wjgnet.com/bpg/GerInfo/287>

**GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH**

<https://www.wjgnet.com/bpg/gerinfo/240>

**PUBLICATION ETHICS**

<https://www.wjgnet.com/bpg/GerInfo/288>

**PUBLICATION MISCONDUCT**

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

**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>



## Atrial fibrillation and prediabetes: A liaison that merits attention!

Akash Batta, Juniali Hatwal

**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 B, Grade B

**Novelty:** Grade B, Grade B

**Creativity or Innovation:** Grade B, Grade B

**Scientific Significance:** Grade B, Grade B

**P-Reviewer:** M Amin KF; Tung TH

**Received:** January 29, 2024

**Revised:** June 3, 2024

**Accepted:** June 18, 2024

**Published online:** July 15, 2024

**Processing time:** 160 Days and 18.4 Hours



**Akash Batta**, Department of Cardiology, Dayanand Medical College and Hospital, Ludhiana 141001, Punjab, India

**Juniali Hatwal**, Department of Internal Medicine, Post Graduate Institute of Medical Education & Research, Chandigarh 160012, India

**Corresponding author:** Akash Batta, MD, Assistant Professor, Senior Scientist, Department of Cardiology, Dayanand Medical College and Hospital, Tagore Nagar, Civil Lines, Ludhiana 141001, Punjab, India. [akashbatta02@gmail.com](mailto:akashbatta02@gmail.com)

### Abstract

Atrial fibrillation (AF) and prediabetes share common pathophysiological mechanisms with endothelial dysfunction and inflammation playing a key role. The resultant vicious cycle which sets in culminates in a higher atherogenicity and thermogenicity of the vascular system resulting in increased major adverse cardiac or cerebrovascular event (MACCE) events. However, the same has not convincingly been verified in real-world settings. In the recent retrospective study by Desai *et al* amongst AF patients being admitted to hospitals following MACCE, prediabetes emerged as an independent risk factor for MACCE after adjusting for all confounding variables. However, certain questions like the role of metformin, quantifying the risk for MACCE amongst prediabetes compared to diabetes, the positive impact of reversion to normoglycemia remain unanswered. We provide our insights and give future directions for dedicated research in this area to clarify the exact relationship between the two.

**Key Words:** Atrial fibrillation; Major adverse cardiac or cerebrovascular event; Prediabetes; Diabetes; Stroke; Heart failure; Dysglycemia; Metformin

©The Author(s) 2024. Published by Baishideng Publishing Group Inc. All rights reserved.

**Core Tip:** Atrial fibrillation (AF) and prediabetes share common pathophysiological mechanisms with endothelial dysfunction and inflammation playing a key role. A vicious cycle is thus set up culminating in higher atherogenicity and thermogenicity of the vascular system. Desai *et al* retrospectively studied the impact of prediabetes amongst AF patients being admitted to hospitals following a major adverse cardiac or cerebrovascular event (MACCE). They found prediabetes to an independent risk factor for MACCE after adjusting for all confounding variables. In this letter, we appraise the study, critically analyze its clinical value and highlight the key limitations.



**Citation:** Batta A, Hatwal J. Atrial fibrillation and prediabetes: A liaison that merits attention! *World J Diabetes* 2024; 15(7): 1645-1647

**URL:** <https://www.wjgnet.com/1948-9358/full/v15/i7/1645.htm>

**DOI:** <https://dx.doi.org/10.4239/wjd.v15.i7.1645>

## TO THE EDITOR

We read with great interest the recent retrospective study by Desai *et al*[1] amongst atrial fibrillation (AF) patients being admitted to hospitals following a major adverse cardiac or cerebrovascular event (MACCE). They looked into various risk factors leading to MACCE amongst AF patients, focusing primarily on the impact of prediabetes on adverse outcomes. The study is very much relevant in clinically practice as roughly 20% of all AF patients have concomitant prediabetes[2]. The authors deserve credit in analyzing a large database and making relevant conclusions which are likely to have a bearing in our approach to AF management.

In this study, the authors highlighted the negative impact of prediabetes in AF patients with prediabetes emerging as an independent risk factor for MACCE after adjusting for all confounding variables. The study indeed comes out as one of largest to date which supports a significant association between prediabetes and MACCE amongst AF patients.

The results of this study are in agreement with prior available data which supports dysglycemia (encompassing prediabetes and diabetes) as a strong risk factor for complications including heart failure, stroke, dementia and myocardial infarction amongst AF patients[2-5]. The basis of this is the common pathophysiology of the two which revolves around endothelial dysfunction and inflammation. The resultant vicious cycle which sets in culminates in a higher atherogenicity and thermogenicity of the vascular system resulting in increased MACCE events[6,7]. There is emerging evidence that the pathophysiology of prediabetes is identical to diabetes and it is often closely linked to multiple cardiovascular risk factors including obesity, dyslipidemia and metabolic syndrome. Understandably, it is associated with worse prognosis compared to normoglycemia independent of AF[8]. While the negative impact of prediabetes on MACCE is somewhat evident, the impact of reversion to normoglycemia on MACCE remains unclear.

The index study although appropriately highlights the impact of prediabetes on MACCE in AF, there are certain issues which have largely gone unattended. We believe some of our insights would help the authors and other researchers delve deeper which would enable us to get a more pellucid look at the relationship of these entities. Firstly, the definition of prediabetes used is not mentioned. The variable definitions do not necessarily correlate similarly with outcomes and thus far in clinical trials, the world health organization: Fasting and 2-hour post glucose load definitions have the highest strength of association with worse outcomes compared to American diabetes association blood glucose and HbA1c based definitions[9]. Hence, the definition used in this study becomes relevant. Secondly, the authors could have analyzed the diabetes cohort as well which would have helped in comparing the odds ratio of MACCE in prediabetes and diabetes compared to normoglycemia. Another possibly way could have been to stratify the population according to the HbA1c levels which again would have clarified the strength of association of dysglycemia with MACCE across the entire spectrum of patients ranging from normal levels to overt diabetes. The authors have not specified the timeline of diagnoses of prediabetes in relation to the MACCE and AF. This is necessary to understand when prediabetes starts to influence outcomes amongst AF patients. Thirdly, the impact of metformin use amongst prediabetics should have been looked at. Going by the data, it is expected that 3%-10% of all prediabetic patients use metformin to delay the progression to diabetes[10]. There is paucity of clear evidence in this regard and hence such a data would have helped clarify the role of metformin in this group of patients.

Since glycemic status of an individual in widely variable, likewise amongst prediabetes, the transition to normoglycemia or overt diabetes is not uncommon. The dynamic nature of this parameter hence cannot be completely accounted for in a retrospective study. Further, the retrospective study design is inherently prone to biases which are likely to influence the result and limit the generalizability of this study. This makes a strong case for larger prospective cohort studies and randomized trials which would further clarify the precise relationship between prediabetes and MACCE amongst AF patients by limiting the biases. Apart from these concerns, the readers must realize that the index study only analyses the data for hospitalized patients which were discharged subsequently. Since the vast majority of AF patients are ambulatory without prior MACCE related hospitalization, the findings of this study may not hold true for this group of patients.

Once again, we congratulate the authors for analyzing their large data set and providing key results for a major public health problem. Their findings hold great significance and provides insights on the negative impact of prediabetes in AF. We hope that our thoughts stimulate and draw the attention of researchers around the world to delve deeper into this field enabling us to better understand this complex relationship in the near future.

## FOOTNOTES

**Author contributions:** Batta A designed, supervised, revised and approved the article; Hatwal J wrote the initial draft and revised the article; All authors have read and approved of the final version of the article.

**Conflict-of-interest statement:** All the authors report no relevant conflicts of interest for this article.

**Open-Access:** This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <https://creativecommons.org/licenses/by-nc/4.0/>

**Country of origin:** India

**ORCID number:** Akash Batta 0000-0002-7606-5826; Juniali Hatwal 0000-0001-5433-0433.

**Corresponding Author's Membership in Professional Societies:** American College of Cardiology, 3445007; European Society of Cardiology, 1036629.

**S-Editor:** Li L

**L-Editor:** A

**P-Editor:** Che XX

## REFERENCES

- 1 **Desai R**, Katukuri N, Goguri SR, Kothawala A, Alle NR, Bellamkonda MK, Dey D, Ganesan S, Biswas M, Sarkar K, Prattipati P, Chauhan S. Prediabetes: An overlooked risk factor for major adverse cardiac and cerebrovascular events in atrial fibrillation patients. *World J Diabetes* 2024; **15**: 24-33 [PMID: 38313858 DOI: 10.4239/wjd.v15.i1.24]
- 2 **Huang JY**, Tse YK, Li HL, Chen C, Zhao CT, Liu MY, Wu MZ, Ren QW, Yu SY, Hung D, Li XL, Tse HF, Lip GYH, Yiu KH. Prediabetes Is Associated With Increased Risk of Heart Failure Among Patients With Atrial Fibrillation. *Diabetes Care* 2023; **46**: 190-196 [PMID: 36251385 DOI: 10.2337/dc22-1188]
- 3 **Zeitler EP**, Piccini JP. Pre-Diabetes and Stroke in Patients With Atrial Fibrillation: When Risk Begets Risk. *J Am Coll Cardiol* 2021; **77**: 885-887 [PMID: 33602471 DOI: 10.1016/j.jacc.2020.12.035]
- 4 **Batta A**, Hatwal J, Batta A, Verma S, Sharma YP. Atrial fibrillation and coronary artery disease: An integrative review focusing on therapeutic implications of this relationship. *World J Cardiol* 2023; **15**: 229-243 [PMID: 37274376 DOI: 10.4330/wjc.v15.i5.229]
- 5 **Militaru M**, Lighezan DF, Tudoran C, Militaru AG. Connections between Cognitive Impairment and Atrial Fibrillation in Patients with Diabetes Mellitus Type 2. *Biomedicines* 2024; **12** [PMID: 38540284 DOI: 10.3390/biomedicines12030672]
- 6 **Wang A**, Green JB, Halperin JL, Piccini JP Sr. Atrial Fibrillation and Diabetes Mellitus: JACC Review Topic of the Week. *J Am Coll Cardiol* 2019; **74**: 1107-1115 [PMID: 31439220 DOI: 10.1016/j.jacc.2019.07.020]
- 7 **Hoogwerf BJ**. Prediabetes, Atrial Fibrillation, and Heart Failure: An Intersection of Comorbidities. *Diabetes Care* 2023; **46**: 9-10 [PMID: 36548705 DOI: 10.2337/dci22-0042]
- 8 **Schlesinger S**, Neuenschwander M, Barbaresko J, Lang A, Maalmi H, Rathmann W, Roden M, Herder C. Prediabetes and risk of mortality, diabetes-related complications and comorbidities: umbrella review of meta-analyses of prospective studies. *Diabetologia* 2022; **65**: 275-285 [PMID: 34718834 DOI: 10.1007/s00125-021-05592-3]
- 9 **Anthony N**, Lenclume V, Fianu A, Moullec N, Debussche X, Gérardin P, Marimoutou C, Nobécourt E. Association between prediabetes definition and progression to diabetes: The REDIA follow-up study. *Diabet Epidemiol Manag* 2021; **3**: 100024 [DOI: 10.1016/j.deman.2021.100024]
- 10 **Aroda VR**, Ratner RE. Metformin and Type 2 Diabetes Prevention. *Diabetes Spectr* 2018; **31**: 336-342 [PMID: 30510389 DOI: 10.2337/ds18-0020]





Published by **Baishideng Publishing Group Inc**  
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA  
**Telephone:** +1-925-3991568  
**E-mail:** [office@baishideng.com](mailto:office@baishideng.com)  
**Help Desk:** <https://www.f6publishing.com/helpdesk>  
<https://www.wjgnet.com>

