

ADA–EASD Consensus Report on the Management of Hyperglycaemia in Type 2 Diabetes in an Afro-Asian Context: Broadening the Perspective

Saptarshi Bhattacharya¹ and Sanjay Kalra^{2,3}

1. Department of Endocrinology, Indraprastha Apollo Hospitals, New Delhi, India; 2. Department of Endocrinology, Bharti Hospital, Karnal, India; 3. University Center for Research & Development, Chandigarh University, Mohali, Punjab, India

DOI: <https://doi.org/10.17925/EE.2023.19.2.1>

The American Diabetes Association and the European Association for the Study of Diabetes consensus statement 2022 effectively captures the changing paradigm of modern diabetes care. As emphasized in the guidelines, a person-centered decision cycle focusing on preventing complications and improving quality of life is the driving principle behind modern diabetes management. Other notable features of the document are its emphasis on self-management education, therapeutic behaviour, sleep hygiene, nonalcoholic fatty liver disease and weight loss. Focus on individualization of care, social determinants of health, and ethnic variations are pertinent from an Afro-Asian perspective. The "language matters" section is a welcome addition that will help to overcome several barriers in diabetes care.

Keywords

Africa, Asia, diabetes complications, diabetes mellitus, person-centered care, self-management of diabetes, social determinants of health

Disclosures: Saptarshi Bhattacharya and Sanjay Kalra have no financial or non-financial relationships or activities to declare in relation to this article.

Review process: Double-blind peer review.

Compliance with ethics: This article is an opinion piece and does not report on new clinical data, or any studies with human or animal subjects performed by any of the authors.

Data availability: Data sharing is not applicable to this article as no datasets were generated or analysed during the writing of this article.

Authorship: The named authors meet the International Committee of Medical Journal Editors (ICMJE) criteria for authorship of this manuscript, take responsibility for the integrity of the work as a whole, and have given final approval for the version to be published.

Access: This article is freely accessible at touchENDOCRINOLOGY.com. © Touch Medical Media 2023

Received: 30 January 2023

Accepted: 16 March 2023

Published online: 21 April 2023

Citation: *touchREVIEWS in Endocrinology*. 2023;19(2):4–6

Corresponding author: Sanjay Kalra, Department of Endocrinology, Bharti Hospital, Karnal, 132001, India. E: brideknl@gmail.com

Support: No funding was received in the publication of this article.

The American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD) consensus statement 2022 is a valuable addition that will help streamline type 2 diabetes mellitus management.¹ The focus on individualized and person-centric care in the statement is welcome. The draft also acknowledges the significance of language, as it plays a decisive role in enhancing motivation and improving compliance.² Promoting self-management education and encouraging self-care are obligatory in chronic conditions such as diabetes. Appropriate therapeutic behaviour will not only optimize the individual outcome, but the active involvement of all stakeholders is required to overcome the challenge of the rising burden of the disease. An important incorporation from a global perspective is the section on nonalcoholic fatty liver disease, given its rising prevalence worldwide. The guidelines emphasize the necessity for a holistic approach, though, from an Afro-Asian perspective, a few additional facets need to be highlighted.

Weight optimization in the Afro-Asian context

As per the International Diabetes Federation estimates, of the 536.6 million people with diabetes, 393.0 million reside in the Western Pacific, Southeast Asia, the Middle East and Africa.³ Therefore, almost two-thirds of the global population with diabetes are from Asia and Africa. The population of these two vast continents is heterogeneous. Though obesity is the principal driver of the diabetes epidemic in Africa, in Asia, people are predisposed to develop metabolic and cardiovascular disease (CVD) despite a low body mass index.^{4,5} The CVD prevalence in both continents is on the rise, often occurring prematurely, with diabetes and obesity implicated as major contributory factors.^{6,7}

Thin fat obesity, often considered the tropical phenotype of obesity, has been attributed to increased visceral adiposity.^{8–10} Weight loss interventions are still effective in modifying the course of diabetes in most Afro-Asians; however, many Asians are already underweight and may benefit from a different therapeutic strategy.¹¹ From an Afro-Asian context, given the heterogeneity in phenotype, the focus should be on weight optimization, whilst most Western guidelines, including the ADA–EASD statement, stress the need for weight loss only.

The choice of glucose-lowering agent

Most recent guidelines recommend glucagon-like peptide-1 receptor agonists (GLP-1 RA) and sodium–glucose cotransporter-2 inhibitors for individuals with diabetes and comorbid atherosclerotic CVD, heart failure or diabetic kidney disease, based on positive results from several cardiovascular outcome trials.^{1,12} Meta-analyses of these trials suggest that Asians may benefit more from these drugs.^{13,14}

However, the high cost of these agents, especially GLP-1 RA, often restricts their widespread use in developing countries. Tirzepatide, a recently approved dual glucose-dependent insulinotropic polypeptide and GLP-1 RA, has even less relevance in the Afro-Asian context due to its cost and lack of availability.¹⁵ Furthermore, as discussed, lean and underweight individuals comprise a

significant proportion of people with diabetes in Asia who do not favour additional weight loss. The clinician has to balance the cardiovascular and renal benefits of these medicines against the risk of excessive weight loss.

In most Western guidelines, sulphonylureas are a third or fourth option glucose-lowering drug as they cause hypoglycaemia and weight gain, and their cardiovascular safety is equivocal.^{1,12} However, they continue to be a popular choice in developing countries. They are affordable, easily available and exert a potent glucose-lowering effect. Asian guidelines continue to advocate using sulphonylureas, which may be especially useful for those who are underweight.^{16,17} Moreover, the cost-effectiveness of a metformin and sulphonylurea combination has been demonstrated in several studies.^{18–21}

A recent meta-analysis found that weight loss of >10% increased the risk of mortality and CVD in type 2 diabetes mellitus.²² A long-term follow-up study in an Iranian population suggested that >5% weight gain improved CVD outcomes in the elderly and the impact of sulphonylurea-induced weight gain was not unfavourable.²³ These findings raise the possibility that the beneficial response to glucose-lowering drugs can vary according to ethnicity and calls for focused studies to answer these questions.

Comorbidities beyond macro- and microvascular complications

For most developed countries, cardiovascular, renal and hepatic diseases account for the major burden of mortality and morbidity associated with diabetes.^{24,25} The ADA–EASD statement rightfully emphasizes strategies to prevent and treat these complications. Besides the high affliction rate with chronic metabolic comorbidities, problems such as acute infections pose a significant challenge in developing countries.²⁶ Diabetes can worsen several Afro-Asian endemic infections such as tuberculosis, melioidosis and dengue.²⁷ Intensive glycaemic control is required for the early resolution of these diseases. Highlighting the need for a dedicated approach to infection-related complications of diabetes in the Afro-Asian context could be beneficial.

Healthcare delivery and social determinants of health

The loco-national health delivery system and social risk factors for inequitable care are often the critical determinants of the treatment strategy. The recent ADA–EASD statement aptly highlights that. In Afro-Asian countries, the healthcare systems vary widely between countries and often within a country.^{28–31} Access to insurance or a state-sponsored medical facility may not be universally available. Not uncommonly, the cost of therapy for diabetes has to be borne by the patient and their family and may interfere with the therapeutic choice. Even then, when used timely and judiciously, inexpensive medicines such as sulphonylureas, metformin and non-analogue insulins have proven long-term efficacy in preventing micro- and macrovascular complications. These benefits continue for decades as evident from the The UK Prospective Diabetes Study.³²

A holistic perspective on health

Whilst the focus on a holistic approach to managing diabetes is heartening, there is a lack of discussion regarding yoga, integrative medicine and spiritual health. All of these are important in East Asian societies and also assume significance from a global standpoint. The burden of diabetes requires integrating different schools of medicine and thought processes to tackle it. The benefits of yoga are backed by evidence and finds its role as an adjuvant therapy for diabetes.³³ Furthermore, the role of integrative medicine in targeting diabetes cannot be underplayed.³⁴ Emerging evidence suggests that meditation, spiritual belief and faith-based interventions, fitness qigong and tai chi, art therapy, acupuncture, and natural medicines positively impact glycaemic control.^{35–40} More information from well-conducted randomized controlled trials can pave the way for integrating these non-conventional methods into mainstream therapy.

Conclusion

Most recommendations in the recent ADA–EASD statement are helpful in the Afro-Asian context. In contemporary diabetes management, the therapeutic plan is individualized depending on medical, behavioural, psychological and social factors. A holistic approach to diabetes care, where the different dimensions of health are being addressed, will broaden the global perspective of the guideline. □

- Davies MJ, Arora VR, Collins BS, et al. Management of hyperglycemia in type 2 diabetes, 2022. A consensus report by the American diabetes association (ADA) and the European association for the study of diabetes (EASD). *Diabetes Care*. 2022;45:2753–86. DOI: 10.2337/dci22-0034
- Peimani M, Nasli-Esfahani E, Sadeghi R. Patients' perceptions of patient-provider communication and diabetes care: A systematic review of quantitative and qualitative studies. *Chronic Illn*. 2020;16:3–22. DOI: 10.1177/1742395318782378
- Sun H, Saeedi P, Karuranga S, et al. IDF diabetes atlas: Global, regional and country-level diabetes prevalence estimates for 2021 and projections for 2045. *Diabetes Res Clin Pract*. 2022;183:109119. DOI: 10.1016/j.diabres.2021.109119
- Gujral UP, Pradeepa R, Weber MB, et al. Type 2 diabetes in South Asians: Similarities and differences with white Caucasian and other populations. *Ann N Y Acad Sci*. 2013;1281:51–63. DOI: 10.1111/j.1749-6632.2012.06838.x
- Chan JCN, Malik V, Jia W, et al. Diabetes in Asia: Epidemiology, risk factors, and pathophysiology. *JAMA*. 2009;301:2129–40. DOI: 10.1001/jama.2009.726
- Zhao D. Epidemiological features of cardiovascular disease in Asia. *JACC Asia*. 2021;1:1–13. DOI: 10.1016/j.jacasi.2021.04.007
- Minjra NW, Nakagaay D, Aliku T, et al. Cardiovascular diseases in Africa in the twenty-first century: Gaps and priorities going forward. *Front Cardiovasc Med*. 2022;9:1008335. DOI: 10.3389/fcvm.2022.1008335
- Cao C, Hu H, Zheng X, et al. Association between central obesity and incident diabetes mellitus among Japanese: A retrospective cohort study using propensity score matching. *Sci Rep*. 2022;12:13445. DOI: 10.1038/s41598-022-17837-1
- Indulekha K, Anjana RM, Surendar J, Mohan V. Association of visceral and subcutaneous fat with glucose intolerance, insulin resistance, adipocytokines and inflammatory markers in Asian Indians (CURES-113). *Clin Biochem*. 2011;44:281–7. DOI: 10.1016/j.clinbiochem.2010.12.015
- Kapoor N. Thin fat obesity: The tropical phenotype of obesity. In: Feingold KR, Anawalt B, Boyce A, (eds). *Endotext*. MDText. com, Inc, 2000. Available at: www.ncbi.nlm.nih.gov/books/NBK568563/ (accessed date: 12 January 2023)
- Sattar N, Welsh P, Leslie WS, et al. Dietary weight-management for type 2 diabetes remissions in South Asians: The South Asian diabetes remission randomised trial for proof-of-concept and feasibility (STANDBY). *Lancet Reg Health Southeast Asia*. 2023;9:100111. DOI: 10.1016/j.lansea.2022.100111
- Blonde L, Umpierrez GE, Reddy SS, et al. American association of clinical endocrinology clinical practice guideline: Developing a diabetes mellitus comprehensive care plan-2022 update. *Endocr Pract*. 2022;28:923–1049. DOI: 10.1016/j.eprac.2022.08.002
- Lee MMY, Ghouri N, McGuire DK, et al. Meta-analyses of results from randomized outcome trials comparing cardiovascular effects of SGLT2is and GLP-1RAs in Asian versus white patients with and without type 2 diabetes. *Diabetes Care*. 2021;44:1236–41. DOI: 10.2337/dc20-3007
- Diallo A, Carlos-Bolumbu M, Galtier F. Age, sex, race, BMI, and duration of diabetes differences in cardiovascular outcomes with glucose lowering drugs in type 2 diabetes: A systematic review and meta-analysis. *EClinicalMedicine*. 2022;54:101697. DOI: 10.1016/j.eclinm.2022.101697
- Frias JP, Davies MJ, Rosenstock J, et al. Tirzepatide versus semaglutide once weekly in patients with type 2 diabetes. *N Engl J Med*. 2021;385:503–15. DOI: 10.1056/NEJMoa2107519
- Kalra S, Bahendeka S, Sahay R, et al. Consensus recommendations on sulfonylurea and sulfonylurea combinations in the management of type 2 diabetes mellitus - International task force. *Indian J Endocrinol Metab*. 2018;22:132–57. DOI: 10.4103/ijem.IJEM_556_17
- Lim L-L, Lau ESH, Cheung JTK, et al. Real-world usage of sulphonylureas in Asian patients with type 2 diabetes using the joint Asia diabetes evaluation (JADE) register. *Diabetes Obes Metab*. 2023;25:208–21. DOI: 10.1111/dom.14865
- Gu S, Shi L, Shao H, et al. Choice across 10 pharmacologic combination strategies for type 2 diabetes: A cost-effectiveness analysis. *BMC Med*. 2020;18:378. DOI: 10.1186/s12916-020-01837-x
- Chien CL, Chen YC, Malone DC, et al. Cost-utility analysis of second-line anti-diabetic therapy in patients with type 2 diabetes mellitus inadequately controlled on metformin. *Curr Med Res Opin*. 2020;36:1619–26. DOI: 10.1080/03007995.2020.1815686
- Permsuwan U, Dilokthornsakul P, Thavorn K, et al. Cost-effectiveness of dipeptidyl peptidase-4 inhibitor monotherapy versus sulfonylurea monotherapy for people with type 2 diabetes and chronic kidney disease in Thailand. *J Med Econ*. 2017;20:171–81. DOI: 10.1080/13696998.2016.1238386
- Nguyen-Thi HY, Nguyen NT, Le NDT, et al. Cost-effectiveness of glimepiride-based intensive glucose control vs. standard glucose control in type 2 diabetes mellitus: An economic analysis of the advance trial in Vietnam. *Front Public Health*. 2020;8:562023. DOI: 10.3389/fpubh.2020.562023
- Huang S, Shi K, Ren Y, et al. Association of magnitude of weight loss and weight variability with mortality and major cardiovascular events among individuals with type 2 diabetes mellitus: A systematic review and meta-analysis. *Cardiovasc Diabetol*. 2022;21:78. DOI: 10.1186/s12933-022-01503-x
- Moazzeni SS, Hizomi Arani R, Deravi N, et al. Weight change and risk of cardiovascular disease among adults with type 2 diabetes: More than 14 years of follow-up in the Tehran lipid

- and glucose study. *Cardiovasc Diabetol*. 2021;20:141. DOI: 10.1186/s12933-021-01326-2
24. Einarson TR, Acs A, Ludwig C, Panton UH. Prevalence of cardiovascular disease in type 2 diabetes: A systematic literature review of scientific evidence from across the world in 2007-2017. *Cardiovasc Diabetol*. 2018;17:83. DOI: 10.1186/s12933-018-0728-6
 25. Gheith O, Farouk N, Nampoory N, et al. Diabetic kidney disease: World wide difference of prevalence and risk factors. *J Nephroparmacol*. 2016;5:49-56.
 26. Dunachie S, Chamnan P. The double burden of diabetes and global infection in low and middle-income countries. *Trans R Soc Trop Med Hyg*. 2019;113:56-64. DOI: 10.1093/trstmh/try124
 27. van Crevel R, van de Vijver S, Moore DAJ. The global diabetes epidemic: What does it mean for infectious diseases in tropical countries? *Lancet Diabetes Endocrinol*. 2017;5:457-68. DOI: 10.1016/S2213-8587(16)30081-X
 28. Jiang W, Xu X, Tang S, et al. Inequity in healthcare needs, health service use and financial burden of medical expenditures in China: Results from a consecutive household monitoring study in Jiangsu Province. *BMC Health Serv Res*. 2019;19:966. DOI: 10.1186/s12913-019-4796-4
 29. Carapinha JL, Ross-Degnan D, Desta AT, Wagner AK. Health insurance systems in five sub-Saharan African countries: Medicine benefits and data for decision making. *Health Policy*. 2011;99:193-202. DOI: 10.1016/j.healthpol.2010.11.009
 30. Du W, Liu P, Xu W. Effects of decreasing the out-of-pocket expenses for outpatient care on health-seeking behaviors, health outcomes and medical expenses of people with diabetes: Evidence from China. *Int J Equity Health*. 2022;21:162. DOI: 10.1186/s12939-022-01775-5
 31. Moucheraud C, Lenz C, Latkovic M, Wirtz VJ. The costs of diabetes treatment in low- and middle-income countries: A systematic review. *BMI Glob Health*. 2019;4:e001258. DOI: 10.1136/bmjgh-2018-001258
 32. Holman RR, Paul SK, Bethel MA, et al. 10-year follow-up of intensive glucose control in type 2 diabetes. *N Engl J Med*. 2008;359:1577-89. DOI: 10.1056/NEJMoa0806470
 33. Dutta D, Bhattacharya S, Sharma M, et al. Effect of yoga on glycemia and lipid parameters in type-2 diabetes: A meta-analysis. *J Diabetes Metab Disord*. 2021;20:349-67. DOI: 10.1007/s40200-021-00751-0
 34. Redmer J, Longmier E, Wedel P. Targeting diabetes: The benefits of an integrative approach. *J Fam Pract*. 2013;62:337-44.
 35. Priya G, Kalra S. Mind-body interactions and mindfulness meditation in diabetes. *Eur Endocrinol*. 2018;14:35-41. DOI: 10.17925/EE.2018.14.1.35
 36. Onyishi CN, Ilchukwu LC, Victor-Aigbodion V, Eseadi C. Impact of spiritual beliefs and faith-based interventions on diabetes management. *World J Diabetes*. 2021;12:630-41. DOI: 10.4239/wjcd.v12.i5.630
 37. Li X, Si H, Chen Y, et al. Effects of fitness qigong and tai chi on middle-aged and elderly patients with type 2 diabetes mellitus. *PLoS One*. 2020;15:e0243989. DOI: 10.1371/journal.pone.0243989
 38. Yang Q, Shao Q, Xu Q, et al. Art therapy alleviates the levels of depression and blood glucose in diabetic patients: A systematic review and meta-analysis. *Front Psychol*. 2021;12:639626. DOI: 10.3389/fpsyg.2021.639626
 39. Salmani Mood M, Yavari Z, Bahrami Taghanaki H, Mahmoudirad G. The effect of acupressure on fasting blood glucose, glycosylated hemoglobin and stress in patients with type 2 diabetes. *Complement Ther Clin Pract*. 2021;43:101393. DOI: 10.1016/j.ctcp.2021.101393
 40. Setiyorini E, Qomaruddin MB, Wibisono S, et al. Complementary and alternative medicine for glycemic control of diabetes mellitus: A systematic review. *J Public Health Res*. 2022;11:22799036221106582. DOI: 10.1177/22799036221106582