GLP-1 receptor agonists and SGLT2 inhibitors in cardiovascular practice: insights from a national survey of French cardiologists.

Keywords
diabetes, atherosclerosis, cardiovascular disease, prescription, SGLT2 inhibitors, GLP1 receptor agonists

Abstract

Introduction
Not applicable.

Material and methods
Not applicable.

Results
Not applicable.

Conclusions
Not applicable.

GLP-1 receptor agonists and SGLT2 inhibitors in cardiovascular practice: insights from a national survey of French cardiologists.

Dear Editor,

Type 2 diabetes mellitus (T2DM) and cardiovascular disease frequently coexist and substantially increase the risk of adverse clinical outcomes [1,2]. Over the last decade, glucagon-like peptide-1 receptor agonists (GLP1-RA) and sodium-glucose cotransporter-2 inhibitors (SGLT2i) have emerged as key therapies capable of reducing cardiovascular and renal events beyond their glucose-lowering effects [1-3]. Consequently, major scientific societies have progressively incorporated these agents into recommendations for the management of patients with T2DM and cardiovascular disease [1-5]. Despite the growing evidence base, limited data are available regarding how these therapies were incorporated into routine cardiovascular practice during the early phases of their implementation. We therefore conducted the nationwide French GLUCOSE (GLP1RA Use by CardiOlogists SurvEy) survey to explore perceptions and prescribing habits regarding GLP1-RA and SGLT2i among private-practice cardiologists.

The French GLUCOSE survey was conducted between October and November 2022 using an online questionnaire hosted on the website of the National College of French Cardiologists (CNCF). All CNCF members were invited by email to participate, with up to four reminders sent to non-respondents. The questionnaire explored respondents' professional characteristics and prescribing habits regarding GLP1-RA and SGLT2i in routine practice, including perceived barriers to their use. Only fully completed questionnaires were included in the analysis. In accordance with French regulations, the registry was declared to the Institut National des Données de Santé, and all participants provided informed consent before accessing the survey.

A total of 165 cardiologists completed the survey during the two-month study period. Overall, 60% of respondents reported regularly prescribing or recommending antidiabetic medications. Among these physicians, SGLT2i were the most frequently prescribed agents (73%), followed by metformin (65%) and GLP1-RA (44%), whereas DPP-4 inhibitors, insulin and sulfonylureas accounted for only a minority of prescriptions (15%, 7% and 5%, respectively).

The main barriers to GLP1-RA prescription were limited familiarity with injectable therapies (34%), the perception that these drugs should primarily be prescribed by diabetologists (31%), and insufficient consultation time to initiate treatment (30%).

When asked to identify clinical scenarios favoring GLP1-RA over SGLT2i, respondents most frequently cited expected weight loss, established atherosclerotic cardiovascular disease and glycated hemoglobin levels exceeding 8%. Conversely, heart failure, chronic kidney disease and the availability of an oral formulation were the leading reasons for preferring SGLT2i over GLP1-RA (Figure 1).

These prescribing preferences appear broadly aligned with the evidence available at the time of the survey. Respondents associated SGLT2i with cardiorenal protection, whereas GLP1-RA were primarily linked to atherosclerotic cardiovascular disease and weight management. Such findings suggest that cardiologists were already differentiating the clinical roles of these therapies according to their predominant benefits [6]. This observation is particularly relevant given the rapid expansion of evidence supporting the use of these agents across multiple cardiovascular and renal disease settings.

These findings provide insight into the early adoption of GLP1-RA and SGLT2i among French private-practice cardiologists. Consistent with the growing evidence base available at the time of the survey, respondents appeared to recognize distinct clinical profiles favoring each therapeutic class. SGLT2i were predominantly preferred in the presence of heart failure and chronic kidney disease, whereas GLP1-RA were mainly associated with weight reduction, atherosclerotic cardiovascular disease and inadequate glycemic control.

The relatively lower use of GLP1-RA observed in our survey may be partially explained by practical barriers, including limited familiarity with injectable therapies and time constraints during routine consultations. Notably, almost one-third of respondents considered the prescription of these agents to be primarily the responsibility of diabetologists. While cardiologists are increasingly involved in the management of patients with cardiovascular disease and type 2 diabetes, optimal care remains multidisciplinary.

Identification of eligible patients and assessment of cardiovascular risk may be facilitated by cardiologists, whereas comprehensive metabolic management, diabetes education, lifestyle counselling and long-term follow-up require close collaboration with diabetologists, primary care physicians and other healthcare professionals.

The evolving role of these therapies extends beyond traditional glucose lowering and is consistent with the broader concept of cardiometabolic medicine [7,8].

More recently, the American Heart Association introduced the Cardiovascular-Kidney-Metabolic (CKM) framework, highlighting the close interrelationship among obesity, type 2 diabetes, chronic kidney disease and cardiovascular disease [9]. This integrated approach further supports the implementation of therapies capable of simultaneously targeting multiple disease pathways. Emerging evidence has proposed an expansion of this paradigm toward Cardiovascular-Kidney-Liver-Metabolic (CKLM) health, recognizing the contribution of metabolic dysfunction-associated steatotic liver disease to overall cardiometabolic risk [10,11]. In this context, GLP1-RA and SGLT2i are increasingly viewed as cornerstone therapies with benefits extending across multiple organ systems [12]. Furthermore, recent updates to the ADA Standards of Care have recognized selected GLP1-RA with proven renal benefit as therapeutic options for patients with type 2 diabetes and chronic kidney disease, further reinforcing their role within the contemporary cardiorenal-metabolic therapeutic landscape [13].

This study has several limitations. First, the survey was restricted to cardiologists affiliated with the National College of French Cardiologists and working at least partially in private practice; therefore, the findings may not be representative of all French cardiologists. Second, the number of respondents was relatively small. Third, as with all surveys, responses may have been influenced by reporting bias despite the anonymous design. In addition, the survey assessed self-reported prescribing practices rather than actual prescription data, and therefore discrepancies between reported attitudes and real-world behaviour cannot be excluded.

Finally, the survey was conducted in 2022 and therefore reflects perceptions and prescribing habits during an early phase of implementation of GLP1-RA and SGLT2i in cardiovascular practice. Since then, several landmark clinical trials and guideline updates have further expanded the indications for these therapies. These include studies demonstrating cardiovascular benefit of GLP1-RA in patients with overweight or obesity irrespective of diabetes status, which may have influenced prescribing attitudes since the survey was conducted. A repeat survey using the same questionnaire and sampling strategy could help determine how cardiologists' perceptions and prescribing practices have evolved and which factors have contributed to change or stability over time. Accordingly, our findings should be interpreted as a snapshot of early adoption rather than as a representation of current prescribing patterns.

In conclusion, this national survey provides insight into the early implementation of GLP1-RA and SGLT2i among French private-practice cardiologists. The results suggest an early

awareness of the distinct clinical profiles supporting each therapeutic class while highlighting barriers to GLP1-RA use at the time of the survey. These findings support ongoing educational initiatives and multidisciplinary collaboration to facilitate broader implementation of evidence-based cardiometabolic therapies in routine clinical practice.

References

[1]. Marx N, Federici M, Schutt K, Muller-Wieland D, Ajjan RA, Antunes MJ, Christodorescu RM, Crawford C, Di Angelantonio E, Eliasson B, Espinola-Klein C, Fauchier L, Halle M, Herrington WG, Kautzky-Willer A, Lambrinou E, Lesiak M, Lettino M, McGuire DK, Mullens W, Rocca B, Sattar N, Group ESCSD. 2023 ESC Guidelines for the management of cardiovascular disease in patients with diabetes. Eur Heart J. 2023;44:4043-4140.

[2]. ElSayed NA, Aleppo G, Aroda VR, Bannuru RR, Brown FM, Bruemmer D, Collins BS, Das SR, Hilliard ME, Isaacs D, Johnson EL, Kahan S, Khunti K, Kosiborod M, Leon J, Lyons SK, Perry ML, Prahalad P, Pratley RE, Seley JJ, Stanton RC, Gabbay RA, on behalf of the American Diabetes Association. 10. Cardiovascular Disease and Risk Management: Standards of Care in Diabetes-2023. Diabetes Care. 2023;46:S158-S190.

[3]. Davies MJ, Aroda VR, Collins BS, Gabbay RA, Green J, Maruthur NM, Rosas SE, Del Prato S, Mathieu C, Mingrone G, Rossing P, Tankova T, Tsapas A, Buse JB. 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;45:2753-2786.

[4]. Arnett DK, Blumenthal RS, Albert MA, Buroker AB, Goldberger ZD, Hahn EJ, Himmelfarb CD, Khera A, Lloyd-Jones D, McEvoy JW, Michos ED, Miedema MD, Munoz D, Smith SC Jr., Virani SS, Williams KA Sr., Yeboah J, Ziaeian B. 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation. 2019;140:e596-e646.

[5]. Grundy SM, Stone NJ, Bailey AL, Beam C, Birtcher KK, Blumenthal RS, Braun LT, de Ferranti S, Faiella-Tommasino J, Forman DE, Goldberg R, Heidenreich PA, Hlatky MA, Jones DW, Lloyd-Jones D, Lopez-Pajares N, Ndumele CE, Orringer CE, Peralta CA, Saseen JJ, Smith SC Jr., Sperling L, Virani SS, Yeboah J. 2018

AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol. Circulation. 2019;139:e1082-e1143.

[6]. Bernardi M, Spadafora L, Galli M, Biondi-Zoccai G, Sabouret P. Should SGLT2 inhibitors be prescribed in all diabetic type 2 patients? Arch Med Sci. 2023;19:528-531.

[7]. Eckel RH, Blaha MJ. Cardiometabolic Medicine: A Call for a New Subspeciality Training Track in Internal Medicine. Am J Med. 2019;132:788-790.

[8]. Saxon DR, Reiter-Brennan C, Blaha MJ, Eckel RH. Cardiometabolic Medicine: Development of a New Subspecialty. J Clin Endocrinol Metab. 2020;105.

[9]. Ndumele CE, Rangaswami J, Chow SL, Neeland IJ, Tuttle KR, Khan SS, Coresh J, Mathew RO, Baker-Smith CM, Carnethon MR, Despres JP, Ho JE, Joseph JJ, Kernan WN, Khera A, Kosiborod MN, Lekavich CL, Lewis EF, Lo KB, Ozkan B, Palaniappan LP, Patel SS, Pencina MJ, Powell-Wiley TM, Sperling LS, Virani SS, Wright JT, Rajgopal Singh R, Elkind MSV. Cardiovascular-Kidney-Metabolic Health: A Presidential Advisory From the American Heart Association. Circulation. 2023;148:1606-1635.

[10]. Katsiki N, Kolovou G, Vrablik M. Metabolic Dysfunction Associated-Steatotic Liver Disease (MASLD) and Cardiovascular Risk: Embrace All Facets of the Disease. Curr Cardiol Rep. 2025;27:19.

[11]. Katsiki N, Kolovou G, Melidonis A, Banach M. The Cardiac-Kidney-Liver (CKL) syndrome: the “real entity” of type 2 diabetes mellitus. Arch Med Sci. 2024;20:207-215.

[12]. Muzurović E, Katsiki N, Volčanšek Š, Plescia F, Rizzo M, Mantzoros CS. Emerging incretin- and multi-agonist-based treatments: the continued refinement and continuous expansion of a potent therapeutic armamentarium for cardio-kidney-liver-metabolic diseases and beyond. Metabolism. 2026;177:156494.

[13]. American Diabetes Association Professional Practice Committee. Chronic Kidney Disease and Risk Management: Standards of Care in Diabetes-2026. Diabetes Care. 2026;49(Suppl 1):S246-S260.

Declarations

Ethics approval and consent to participate

In line with French legislation for this type of research, ethics committee approval was not required, as no patients were involved. All participants provided written informed consent (obligation to consent online in order to access the questionnaire).

Consent for publication

Not applicable.

Availability of data and materials

All the data generated by this study are presented in the current report and/or its supplementary material.

Competing interests

Dr. Sabouret declares that he has received speaker fees from Astra Zeneca, Axis TV, BMS, Les laboratoires Servier, Novartis, Novonordisk, Sanofi, Vifor, outside the present work. Dr. Santos reports receiving the following: consulting fees and lecture fees from Abbott, Amgen, Amryt, AstraZeneca, Aché, Biolab, Getz Pharma, Eli Lilly, Libbs, Merck, PTC Therapeutics, Novo Nordisk, Novartis, Sanofi-Regeneron Pharmaceuticals; grant support from Amgen, Kowa, Esperion, Novartis, Sanofi-Regeneron Pharmaceuticals. Giuseppe Biondi-Zoccai has consulted, lectured and/or served as advisory board member for Abiomed, Advanced Nanotherapies, Aleph, Amarin, AstraZeneca, Balmed, Cardionovum, Cepton, Crannmedical, Endocore Lab, Eukon, Guidotti, Innovheart, Meditrial, Menarini, Microport, Opsens Medical, Synthesa, Terumo, and Translumina, outside the present work. No other author has any conflict of interest to declare.

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Authors' contributions

Study conception and design: PS, FD; investigation: PS, RDS, AS, SC, JR, OH, LO, DGM, TG, MG, MV, JCD, LT, MG, GBZ, MB, NL, FD; data curation: PS, GBZ, MB, NL, FD; writing of first draft: PS; final approval of final draft: PS, RDS, AS, SC, JR, OH, LO, DGM, TG, MG, MV, JCD, LT, MG, GBZ, MB, NL, FD.

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Not applicable.

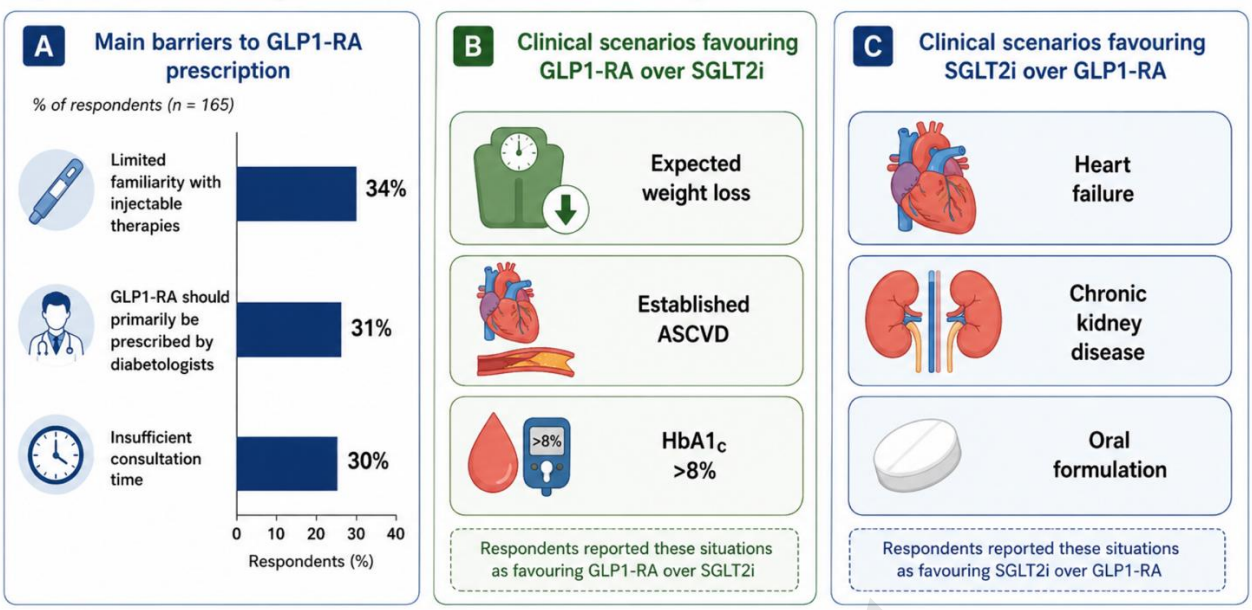


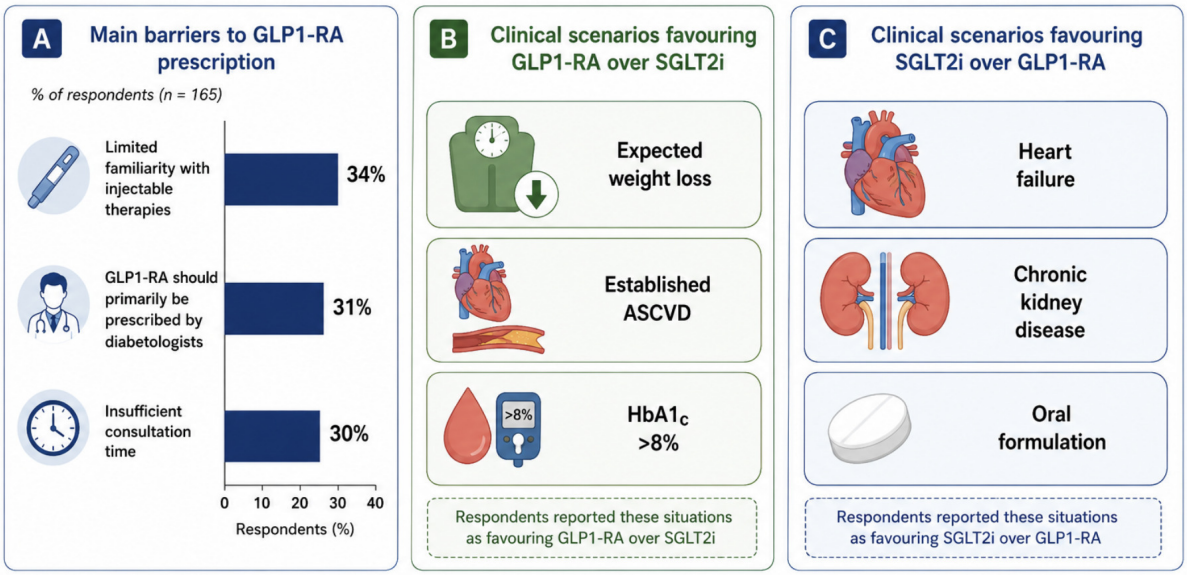
Figure 1. Main findings of the French GLUCOSE survey.

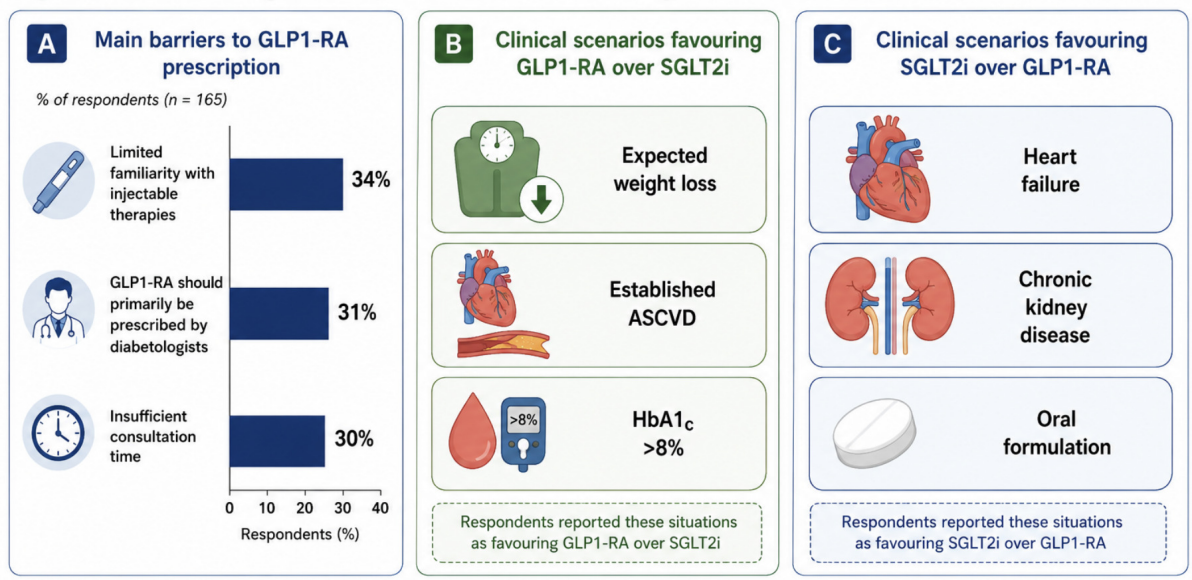
(A) Principal barriers to GLP1 receptor agonist (GLP1-RA) prescription among French private-practice cardiologists. Percentages indicate the proportion of respondents reporting each barrier.

(B) Clinical scenarios most frequently identified as favouring GLP1-RA over sodium-glucose cotransporter-2 inhibitors (SGLT2i), including expected weight loss, established atherosclerotic cardiovascular disease (ASCVD), and glycated haemoglobin (HbA1c) >8%.

(C) Clinical scenarios most frequently identified as favouring SGLT2i over GLP1-RA, including heart failure, chronic kidney disease (CKD), and the availability of an oral formulation.

ASCVD, atherosclerotic cardiovascular disease; CKD, chronic kidney disease; GLP1-RA, glucagon-like peptide-1 receptor agonists; HbA1c, glycated haemoglobin; SGLT2i, sodium-glucose cotransporter-2 inhibitors.


A
Main barriers to GLP1-RA prescription
% of respondents (n = 165)
Limited familiarity with injectable therapies
34%
GLP1-RA should primarily be prescribed by diabetologists
31%
Insufficient consultation time
30%
0 10 20 30 40
Respondents (%)
B
Clinical scenarios favouring GLP1-RA over SGLT2i
Expected weight loss
Established ASCVD
HbA1c >8%
Respondents reported these situations as favouring GLP1-RA over SGLT2i
C
Clinical scenarios favouring SGLT2i over GLP1-RA
Heart failure
Chronic kidney disease
Oral formulation
Respondents reported these situations as favouring SGLT2i over GLP1-RA



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