

The Prevalence of Cardiometabolic and Renal Long-Term Conditions in Individuals with Type 2 Diabetes Mellitus: An Umbrella Review

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Background

- Type 2 diabetes mellitus (T2DM) is linked to a high risk of developing cardiometabolic and renal long-term conditions (LTCs), affecting morbidity and mortality^{1,2,3}.
- Aim:** To synthesise evidence on the prevalence of these LTCs in individuals with T2DM through an umbrella review of systematic reviews.

Methods

- Registered in **PROSPERO (CRD42024490470)**, guided by Joanna Briggs Institute (JBI) Manual for Evidence Synthesis
- Databases searched:** Ovid Medline, Ovid Embase, Cochrane, and CINAHL from inception to Jan 2024
- Inclusion criteria:** systematic reviews of observational studies on cardiometabolic and renal LTCs in T2DM.
- Quality assessment:** JBI Critical Appraisal Checklist
- Data synthesised narratively and presented in forest plots and tables.

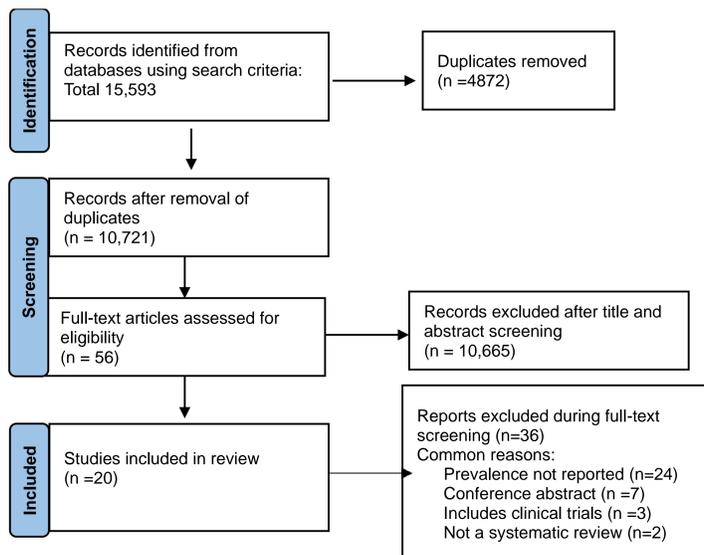


Figure 1: PRISMA Flowchart

Acknowledgements

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Next Steps

- Investigate the progression of cardiometabolic and renal LTCs in people with diabetes over time, utilising CPRD and linked datasets.
- Predictive Modeling:** Develop and apply Markov models to estimate the lifetime risk and sequence of LTCs development, stratified by demographic factors like age, ethnicity, gender, and socioeconomic status.

Results

- 20 systematic reviews (15 with meta-analyses) included, covering 675 primary studies.
- Cardiometabolic conditions:** Cardiovascular disease was the most prevalent cardiometabolic condition, with a pooled prevalence range of 13.0% to 46.0%.
- Renal conditions:** nephropathy prevalence ranged from 4.2% to 38.0%; chronic kidney disease from 18.2% to 35.5%.
- Higher prevalence estimates observed in males and low-income and lower-middle-income countries.

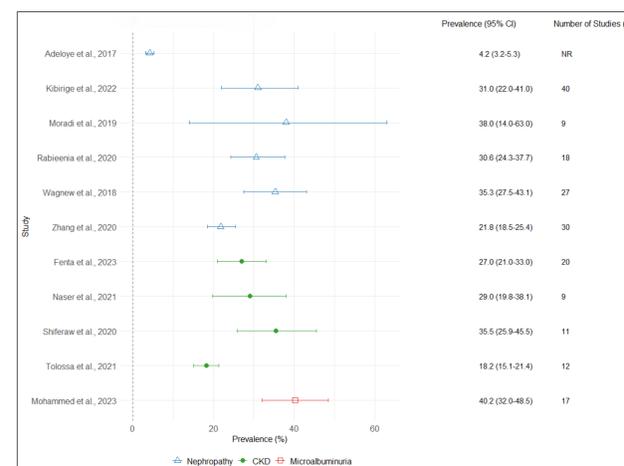


Figure 2: Forest plot of pooled prevalence estimates of renal LTCs in systematic reviews

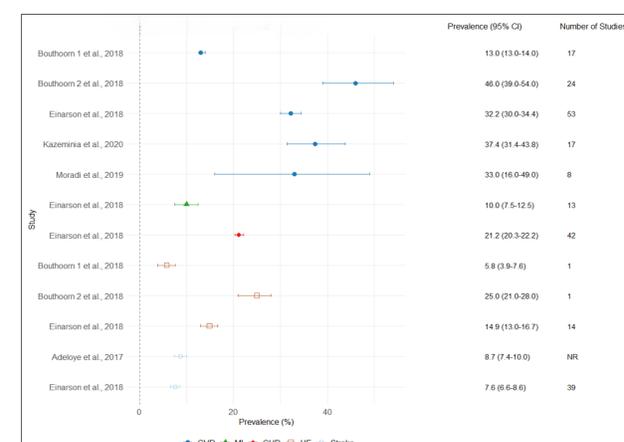


Figure 3: Forest plot of pooled prevalence estimates of cardiometabolic LTCs in systematic reviews

Conclusion

- High prevalence of cardiometabolic and renal LTCs in T2DM, emphasizing the need for targeted management.
- Prevalence estimates are higher in males and in low- and lower-middle-income countries.

References

- ¹Kianmehr H, et al. JAMA Network Open. 2022;5(4):e227705-e.
- ²Khunti K, et al. Diabetes Care. 2023;46(12):2092-101.
- ³Rodriguez IM, et al. Curr Diab Rep. 2023;23(5):59-67.

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