# AB023. Metformin versus sulfonylurea use for new-onset dementia and anxiety disorder and depression: a propensity score-matched population-based cohort study with competing risk analyses

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**Background:** The effects of metformin and sulfonylurea on new-onset cognitive dysfunction in type 2 diabetes mellitus (T2DM) remain unclear. This study aimed to compare the risks of dementia and anxiety disorder and depression between metformin and sulfonylurea users.

**Methods:** This retrospective cohort study included patients with T2DM in Hong Kong between 1st January 2013 and 31st December 2019. The primary outcomes were new-onset dementia and new-onset anxiety disorder and depression. The secondary outcome was all-cause mortality. Patients >18 years old with metformin or sulfonylurea use were included. Patients with prior diagnoses of the above events or relevant medications usage were excluded. 1:1 propensity score matching was performed based on demographics, prior comorbidities, use of other medications, and laboratory tests.

**Results:** After 1:1 propensity score matching, the final study cohort consisted of 21,244 matched metformin users (45.2% male, mean age: 67.9±12.0 years) and 21,244 sulfonylurea users (49.6% male, mean age: 66.8±13.7 years). The overall mean follow-up time was 4.33±1.79 years. Metformin use was associated with lower risks of dementia [hazard ratio (HR): 0.88; 95% confidence interval (CI): 0.80–0.97, P=0.0074], anxiety disorder and depression (HR: 0.71, 95% CI: 0.61–0.82, P<0.0001), and all-cause mortality (HR: 0.83, 95% CI: 0.80–0.85, P<0.0001) than sulfonylurea use. These associations remained significant in the sensitivity analyses with cause-specific hazard models and sub-distribution hazard models.

**Conclusions:** The use of metformin was associated with lower risks of dementia, anxiety disorder and depression, and mortality than sulfonylurea use in patients with T2DM.

**Keywords:** Metformin; sulfonylurea; cognitive dysfunction; mortality; diabetes mellitus; type 2

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## Footnote

*Conflicts of Interest:* The authors have no conflicts of interest to declare.

*Ethical Statement:* The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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