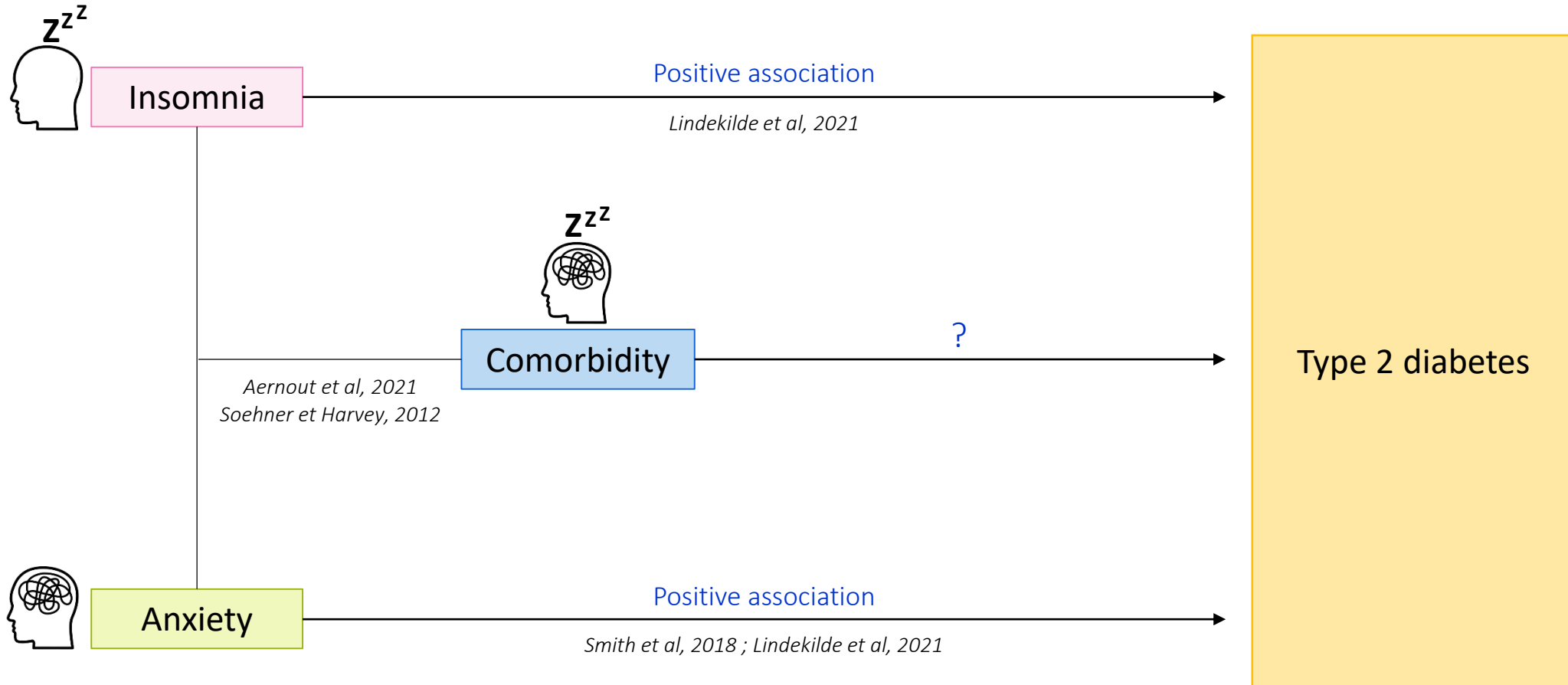


Chronic insomnia, high trait anxiety and their comorbidity as risk factors for incident type 2 diabetes

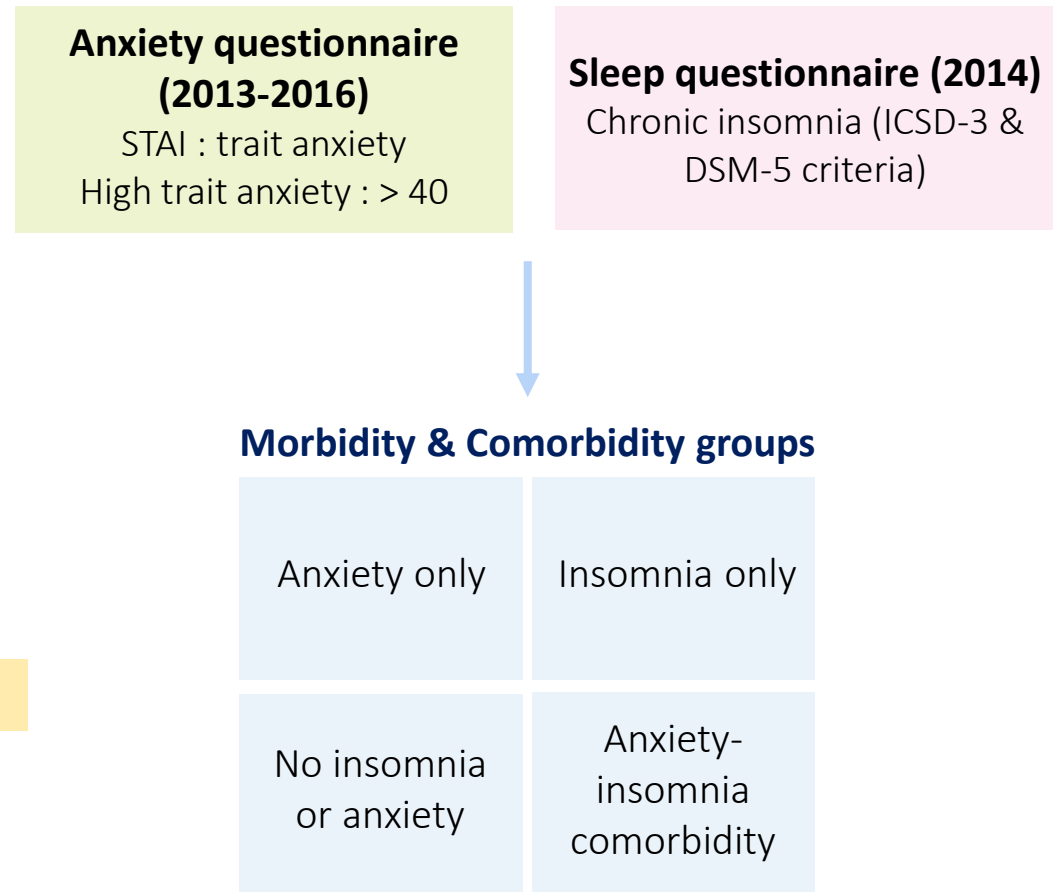
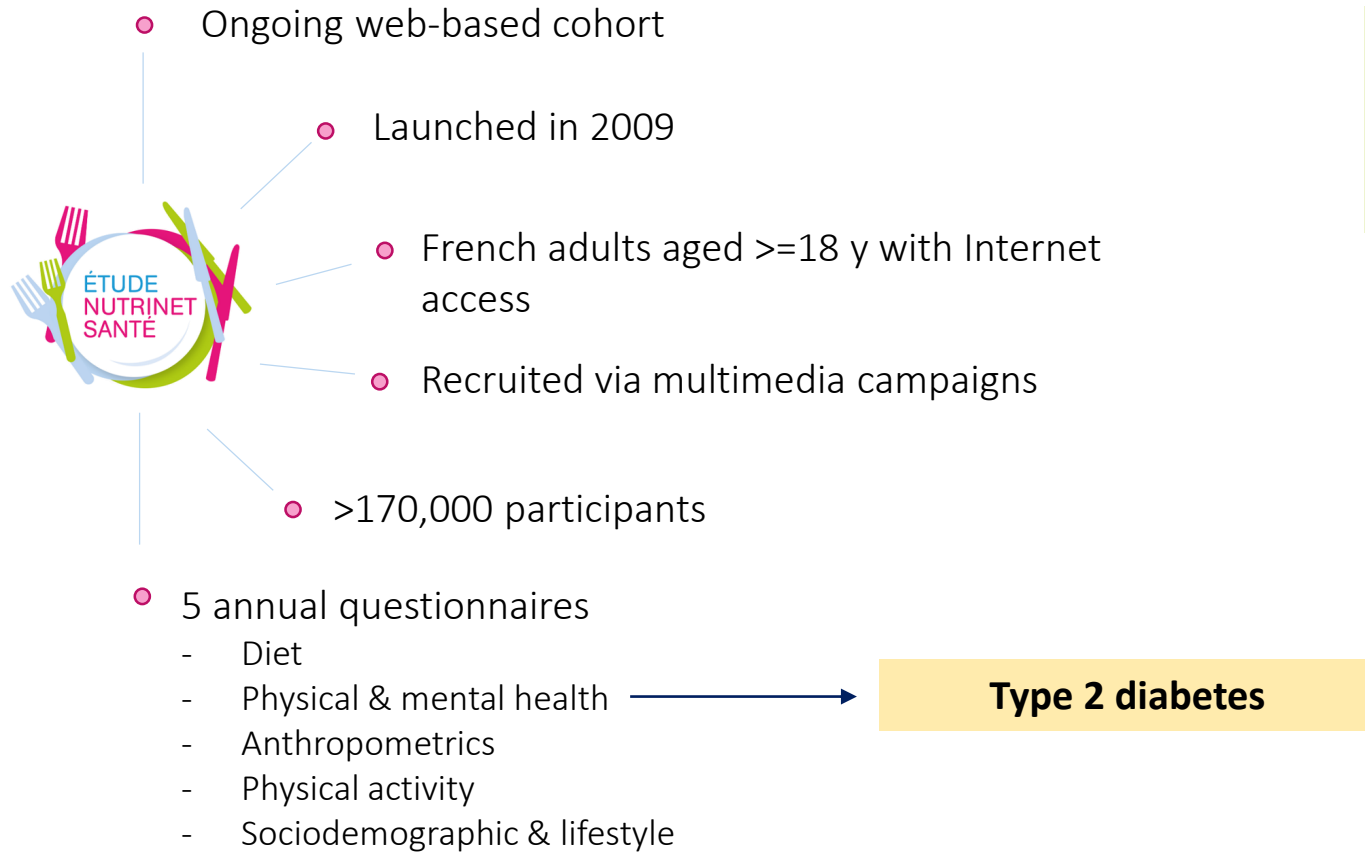
Équipe de Recherche en Épidémiologie Nutritionnelle
Sorbonne Paris Nord University

Pauline Duquenne*, Léopold K. Fezeu, Cécilia Samieri, Stéphanie Chambaron, Marie-Claude Brindisi, Emmanuelle Kesse-Guyot, Serge Hercberg, Mathilde Touvier, Valentina A. Andreeva

This work has been carried out within the framework of the ANR-21-CE36-0003 MEMORIES project supported by the French National Research Agency.



NutriNet-Santé Study



Statistical analysis

Comorbidity groups

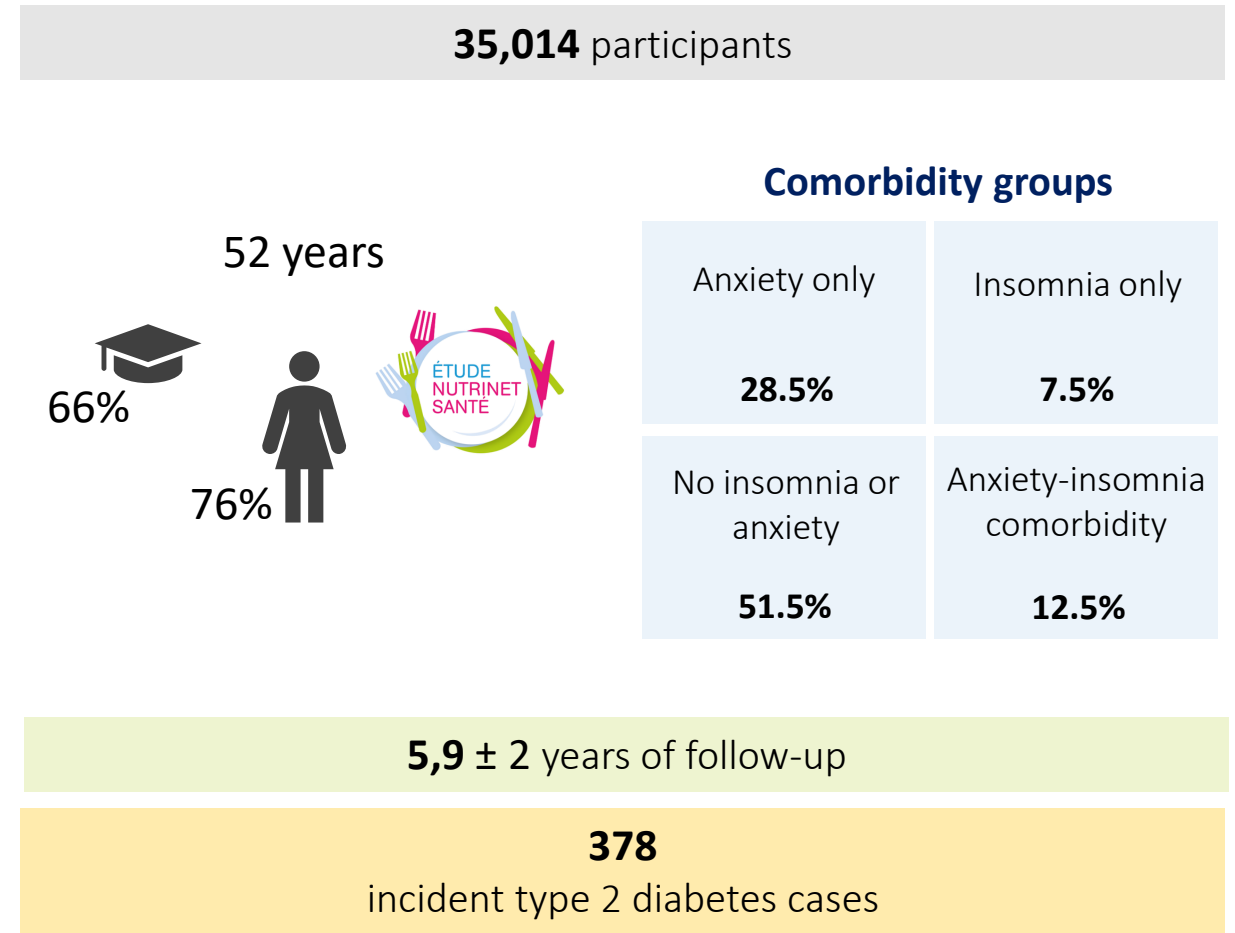
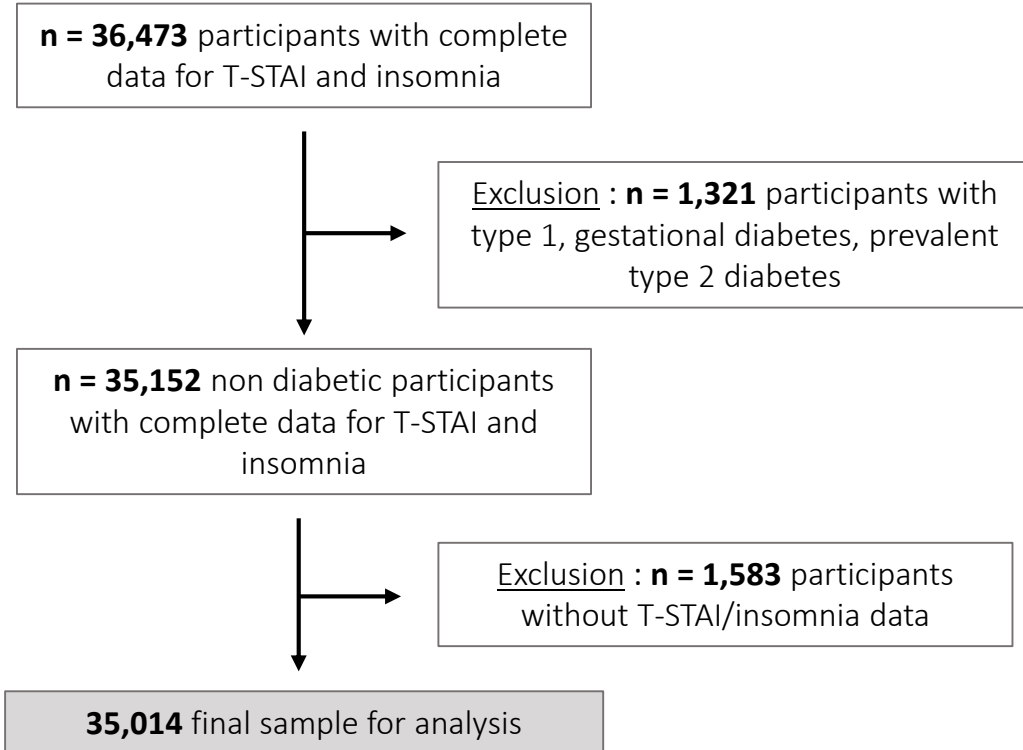
Age (time-scale)	Sex
Obesity	Employment
Education	Physical activity
Children <18 at home	Sedentariness
Tobacco use status	Alcohol consumption
Hypertension	Family history of T2D
Dyslipidemia	Gestational diabetes
Depressive symptomatology	

Multivariable Cox
proportional hazards model

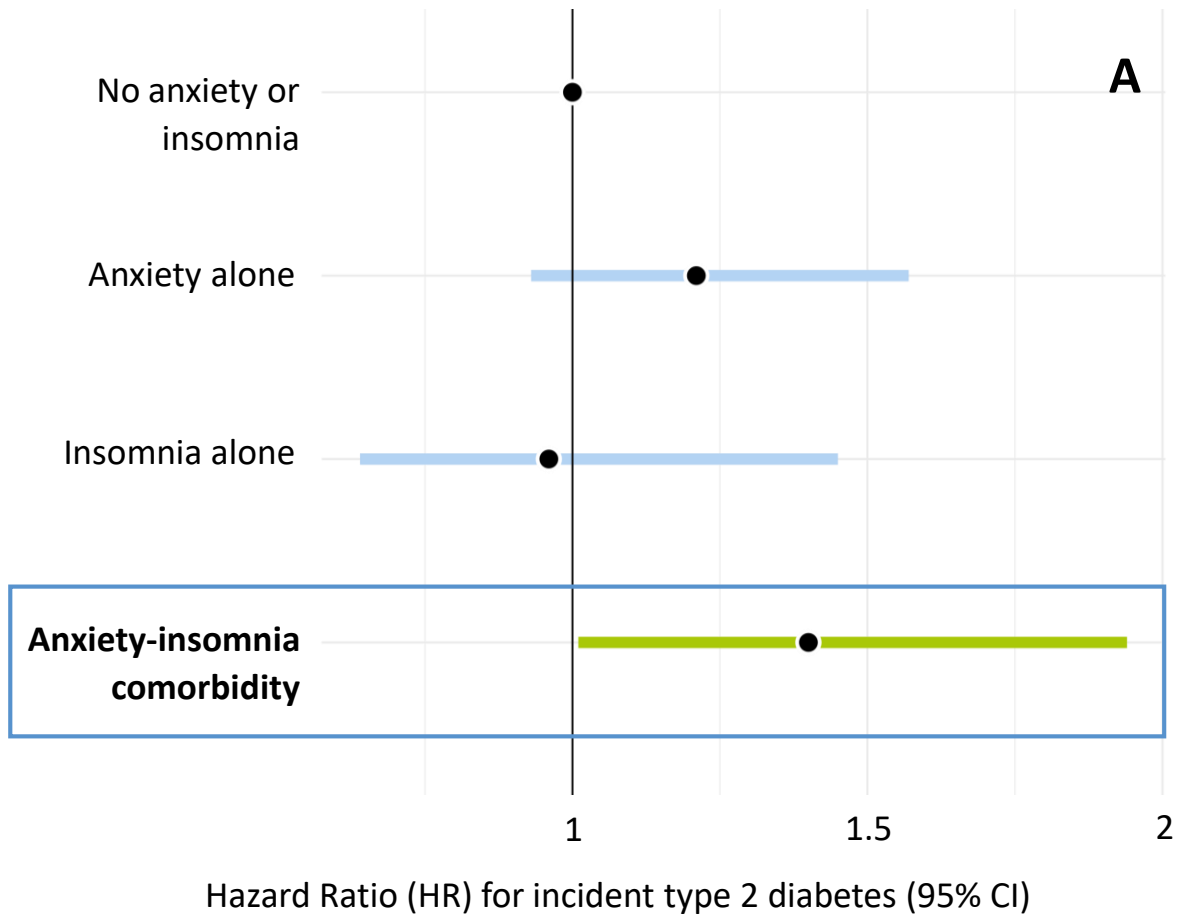


**Incident type 2
diabetes**

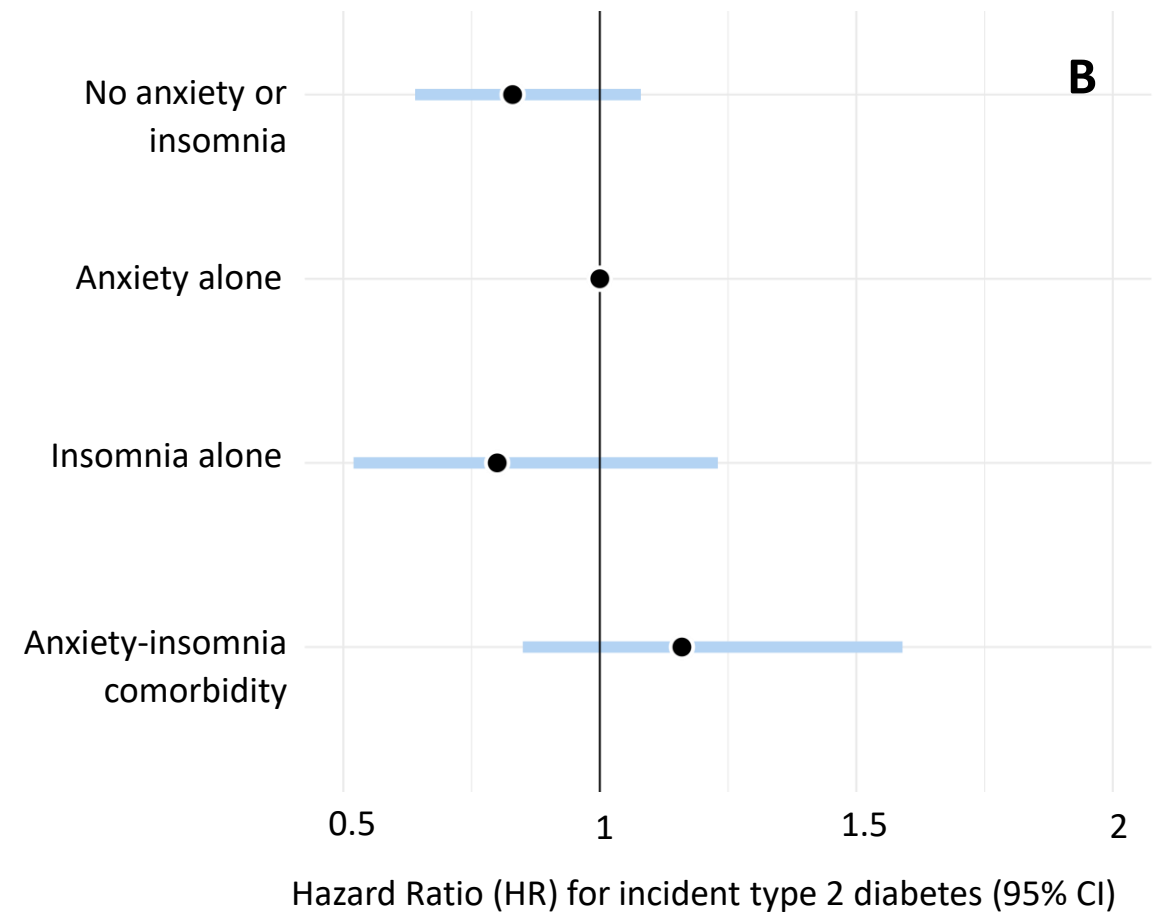
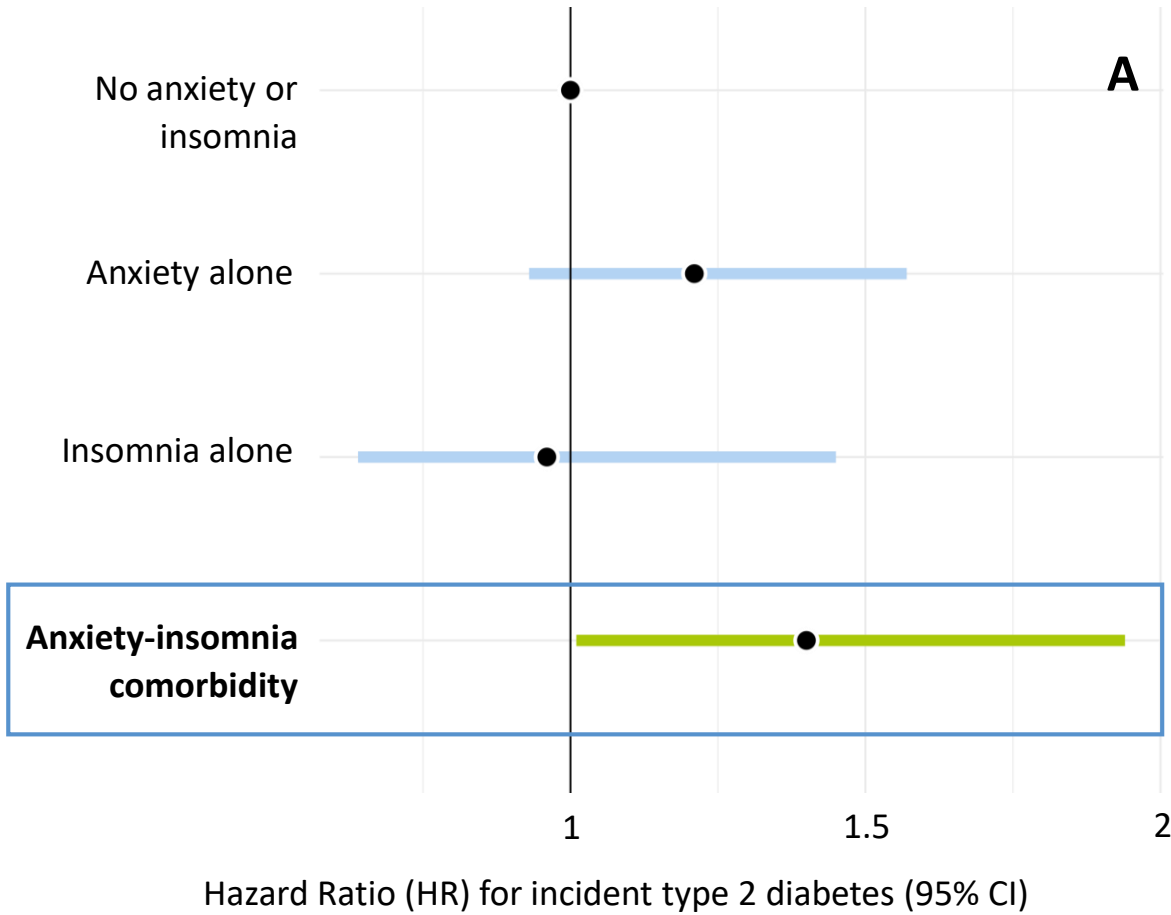
Sample description



Cox model results



Cox model results



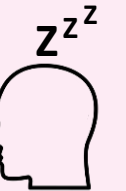
Anxiety is not associated with T2D in our study

- The most recent meta-analysis concluded that anxiety represents a **higher risk** of T2D (*Smith et al. 2018*)
- One of the 14 studies included in the meta-analysis used the **STAI** -> **did not find** an association with T2D (*Abraham et al. 2015*)
- None of the studies adjusted for **insomnia**



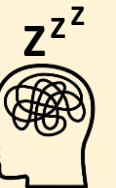
Chronic insomnia is not associated with T2D in our study

- An umbrella review concluded to a **positive association** between sleep disorders and T2D (*Lindekilde et al. 2021*)
- Sleep disorders are studied without taking into account their **frequency** and **impact on daily life**
- None of the studies adjusted for **anxiety**



Anxiety-insomnia comorbidity is positively associated with T2D in our study

- To our knowledge, no study had investigated this relationship
- Some studies suggest that these two disorders could be **different symptoms of the same pathology** (*Uhde et al. 2009*)
- **Bidirectional** relationship between anxiety and insomnia (*Uhde et al. 2009, Hirotsu et al. 2015*)



Limitations and strengths



- 70% women with higher socioeconomic status
- Type 2 diabetes underdiagnosed in France
- Subjective measures of insomnia
- No validated cut-off value for T-STAI



- Large sample of participants, wide range of covariates
- Longitudinal design with almost 6 years of follow-up
- Insomnia questionnaire based on ICSD-3 and DSM-5
- Validated anxiety questionnaire

Conclusion



Participants with **anxiety-insomnia comorbidity were more likely to develop type 2 diabetes** than participants with no anxiety or insomnia

Future prospective studies are needed to know more about the **impact of the anxiety-insomnia** comorbidity, using **objective measures of insomnia and anxiety**

Thank you !
