

# Prevalence of type 2 diabetes with stable coronary artery disease but without prior myocardial infarction or stroke and THEMIS-like patients from the SNDS French nationwide claims database

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## Purpose

- The THEMIS randomized trial showed a lower incidence of ischemic cardiovascular events but a higher incidence of major bleeding in ticagrelor plus aspirin group than in placebo plus aspirin group in patients with stable coronary artery disease and type 2 diabetes (CAD-T2M) without prior myocardial infarction (MI) or stroke (Steg *et al*, NEJM 2019).
- In current practice, the number of patients concerned and their characteristics are not well known.
- The main objective of this study was to assess the characteristics of CAD-T2DM adults without prior MI-stroke and, more specifically, of THEMIS-like patients in a real world setting.

## Methods

- Design:** Cohort study in the French nationwide claims database (SNDS, 86% of the 66 million people).
- Data source:** The SNDS contains individual pseudonymised information from birth to death and includes out and inpatients information (drug dispensing, hospital discharge summaries, date of death...).
- Study populations:**
  - CAD-T2DM population without prior MI-stroke:** all CAD-T2DM prevalent patients without MI-stroke within the 5-year history period identified on 1<sup>st</sup> January 2014, and followed for 2 years or until death in the database.
  - THEMIS-like population:** all patients of the previous population with specific criteria ( $\geq 50$  years at index date, without renal failure with dialysis, cirrhosis/liver cancer history, intracranial/gastro-intestinal bleeding for the last 6 months, or anticoagulant/antiplatelet agent 2 months around the index date).
- Data analysis (for both populations):**
  - Description of baseline characteristics and clinical history,
  - Estimate of the prevalence proportion on 01/01/2014 with gender and 5-year age classes standardisation according to national (INSEE) and European (Eurostat) statistics.

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## Results

### Selection of the study populations (Figure 1)

CAD-T2DM patients on 01/01/2014 (main scheme) n = 359 595	
- < 18 years	n = 4 (0.0%)
- Death at index date	n = 51 (0.0%)
- Not continuously affiliated to the main scheme (2009 and 2015)	n = 13 729 (3.8%)
- Database history < 5 years	n = 14 782 (4.1%)
- Incomplete follow-up	n = 2 407 (0.7%)
CAD-T2DM population n = 328 622 (91.4%)	
- Diagnosis of MI (5-year history)	n = 51 816 (14.4%)
- Diagnosis of ischemic or unknown stroke (5-year history)	n = 18 546 (5.2%)
No prior MI-stroke CAD-T2DM population n = 258 260 (71.8%)	
- < 50 years	n = 4 341 (1.2%)
- Intracranial bleeding or haemorrhagic stroke (5-year history)	n = 1 833 (0.5%)
- GI bleeding (6-month history)	n = 2 388 (0.7%)
- Renal failure requiring dialysis (5-year history)	n = 40 327 (11.2%)
- Cirrhosis of liver or liver cancer (5-year history)	n = 4 857 (1.4%)
- APA or anticoagulant treatments (2-month before and after index date)	n = 140 180 (39.0%)
THEMIS-like population n = 64 334 (17.9%)	

Figure 1. Identification and selection of the study populations

### Baseline characteristics (Table 1)

Table 1. Description of patient baseline characteristics

	CAD-T2DM population without prior MI-stroke n=258 260	THEMIS-like population n = 64 334
Male, n (%)	176 407 (68.3)	42 238 (65.7)
Median age (in years)	73.0	72.0
History of both CAD and T2DM diagnoses in years in categories, n (%)		
≤ 1	33 280 (12.9)	7 460 (11.6)
[1-2]	32 788 (12.7)	8 677 (13.5)
[2-3]	33 295 (12.9)	9 021 (14.0)
[3-4]	37 258 (14.4)	9 614 (14.9)
>4	67 040 (26.0)	16 346 (25.4)
Revascularisation procedure (PCI or CABG), n (%)	73 101 (28.3)	11 957 (18.6)

### Clinical history (Table 2)

Table 2. Description of clinical history in study populations

	CAD-T2DM population without prior MI-stroke n = 258 260	THEMIS-like Population n = 64 334
History of major comorbidities, n (%)		
Hypertension	229 299 (88.8)	54 390 (84.5)
Atrial fibrillation	204 943 (79.4)	48 554 (75.5)
Renal impairment	55 155 (21.4)	6 647 (10.3)
Peripheral arterial disease	51 647 (20.0)	2 943 (4.6)
Dyslipidemia	49 703 (19.2)	7 326 (11.4)
Cancer	49 406 (19.1)	10 673 (16.6)
Heart failure	47 066 (18.2)	10 958 (17.0)
Diabetic foot ulcer	41 744 (16.2)	5 821 (9.0)
History of diabetic complications, n (%)		
Diabetic nephropathy	101 419 (39.3)	20 301 (31.6)
Diabetic retinopathy	68 149 (26.7)	13 506 (20.9)
Diabetic neuropathy	33 126 (12.8)	4 299 (6.7)
Diabetic neuropathy	27 715 (10.7)	5 400 (8.4)
Diabetic neuropathy	25 891 (10.0)	4 874 (7.6)

### French and European prevalence (Table 3)

Table 3. Estimated 2014 prevalence of study populations for French and European\* adult populations

	Populations (%)			Populations (%)		
	CAD-T2DM without prior MI-stroke			THEMIS-like		
	Men	Women	All	Men	Women	All
French adults (all) from INSEE	8.96	3.63	6.17	2.14	0.98	1.53
18-64 years	2.81	0.78	1.78	0.72	0.23	0.47
65-75 years	27.40	7.37	16.73	6.88	2.12	4.34
>75 years	40.61	16.46	25.45	8.70	4.18	5.86
European adults (all) from Eurostat	8.74	3.51	6.04	2.09	0.95	1.50
18-64 years	2.71	0.76	1.73	0.70	0.22	0.46
65-75 years	27.74	7.54	16.88	6.95	2.16	4.37
>75 years	40.54	16.20	25.38	8.71	4.11	5.84

\* standardized to 2014 EU population

## Conclusions

- In real world setting, CAD-T2DM population without prior MI-stroke and THEMIS-like population had similar characteristics, although noting some differences in comorbidities.
- The THEMIS-like prevalence was estimated to be 1.53% French adults, representing about a quarter of CAD-T2DM patients without prior MI-stroke, close to the European results (1.50 %).