

Multimorbidity in patients with type 2 diabetes mellitus in the Basque Country (Spain)



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WHAT WE ALREADY KNOW: Diabetes mellitus

In Spain, the prevalence of diabetes mellitus type 2 (T2DM) in patients over 17 years is **13.8%** and around **6%** is unknown.

Between 2011 and 2013 the **incidence of diabetes mellitus** has increased in a **33.4%**.

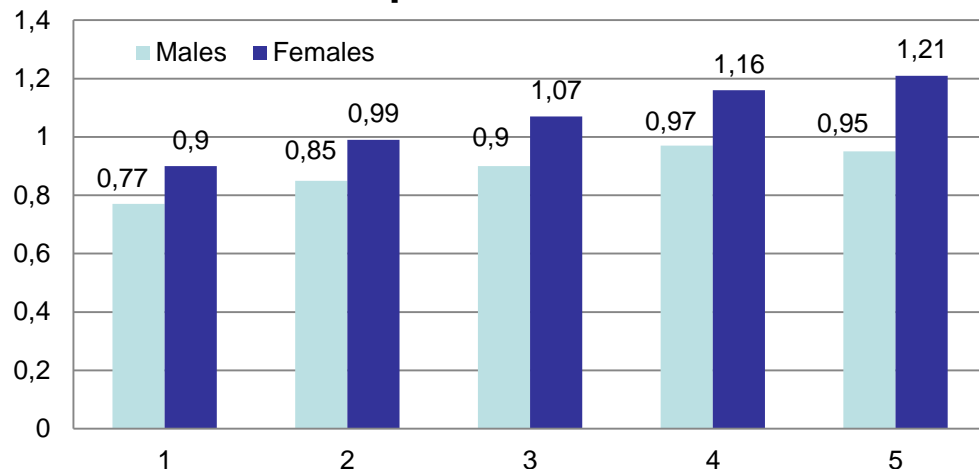
The average cost of a patient with diabetes is estimated in **2,449 €** per year, nearly twice the per capita cost.

WHAT WE ALREADY KNOW: MM in the Basque Country

Multimorbidity of chronic diseases was found among **23.61%** of the total Basque population and among **66.13%** of those older than 65 years.

The average number of chronic conditions is **higher among women** and increases with the **deprivation index**.

Average of chronic conditions by deprivation index



Multimorbid patients account for **63.55%** of total healthcare expenditures.

OBJECTIVES



The **objectives** of this study are :

- To describe the **prevalence of multimorbidity** of patients with T2DM
 - Related complications
 - Unrelated complications
- To estimate direct **healthcare costs**

METHODS (I)

- Descriptive study
- Study Subjects: Patients with type 2 diabetes mellitus from the Basque Country, aged ≥ 35 years
- Period 09/01/2010 to 31/08/2011
- Inclusion criteria: Everybody who had been diagnosed with type 2 diabetes mellitus or unspecified diabetes mellitus at any point in their lives, or who had been prescribed antidiabetic medication, regardless of whether or not they had visited healthcare services during the observation period.

METHODS (II)

- Exclusion criteria: Patients who had been diagnosed with type 1 diabetes mellitus during any contact with the services, or those whose diagnosis always corresponded to unspecified diabetes mellitus, but the only medication received was insulin
- Databases:
 - PREST database (sociodemographics, comorbidities classified by a case-mix diagnostic system [Adjusted Clinical Groups] and healthcare costs variables)
 - Multimorbidity database (52 chronic conditions codify as 0 if the disease is not present and as 1 if the disease is present)

ESTIMATION OF HEALTHCARE COSTS

Primary care

- Visits to GP
- Visits to nurse
- Radiology and Blood tests

Especialized care

- Visits to specialist doctor
- Day hospital (some procedures like: dialysis, chemotherapy and others)

Inpatients

- Diagnosis Related Groups (GRD)

Emergency

- Directly from the number of visits

Prescriptions

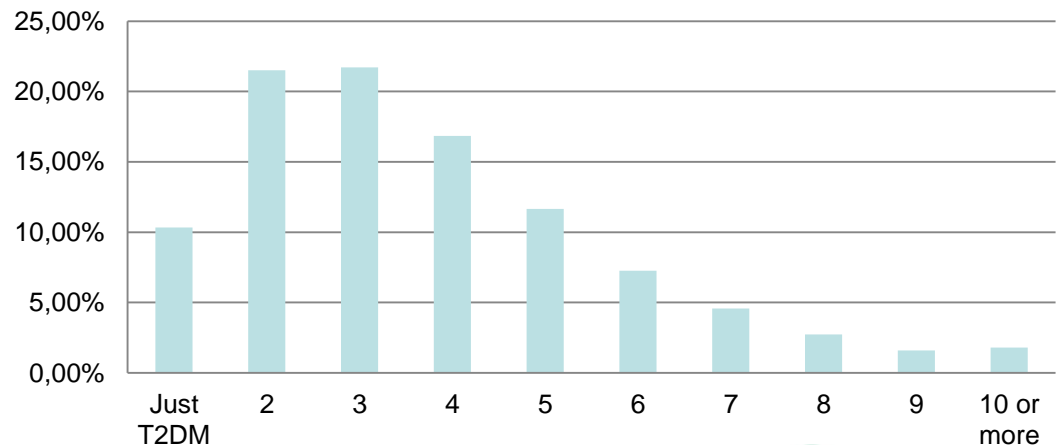
- Directly from prescriptions coded in the EHR in Primary Care

RESULTS

In the Basque Country, in the population with 35 years and over (1,473,943 inhabitants), **134,413** patients suffer from T2DM, corresponding to a known prevalence of **9.12%**.

The **prevalence of multimorbidity** was **90.4%** between patients with T2DM.

Distribution of T2DM population by number of chronic conditions



RESULTS

Related pathologies to T2DM

Type 2 diabetes complications (prevalence)	Total (N=134,421)	Males (N=72,539)	Females (N=61,882)
Ischaemic Heart Disease	11.45	14.54	7.83
Renal failure	8.37	8.35	8.4
Stroke	6.96	7.42	6.42
Heart Failure	4.32	3.93	4.79
Peripheral neuropathy	1.33	1.24	1.44
Foot Ulcers	1.93	1.76	2.13
Retinopathy	7.18	7.18	7.18
Type 2 diabetes complications (incidence)			
Myocardial infarction	0.4	0.5	0.29
Major amputations	0.08	0.09	0.06
Avoidable hospitalisations	5.5	5.81	5.14

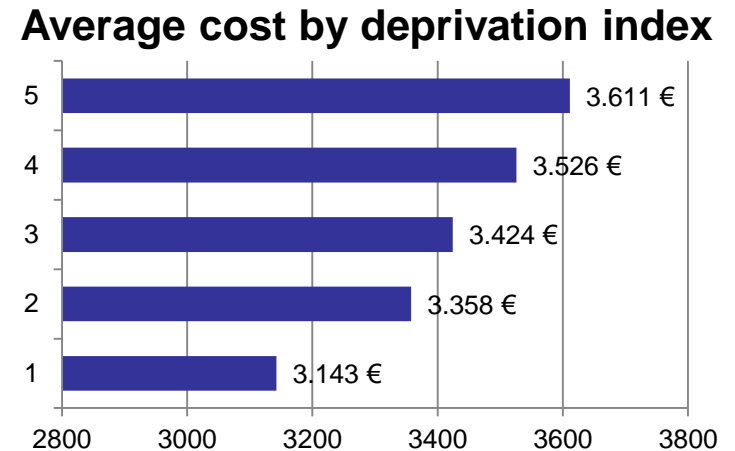
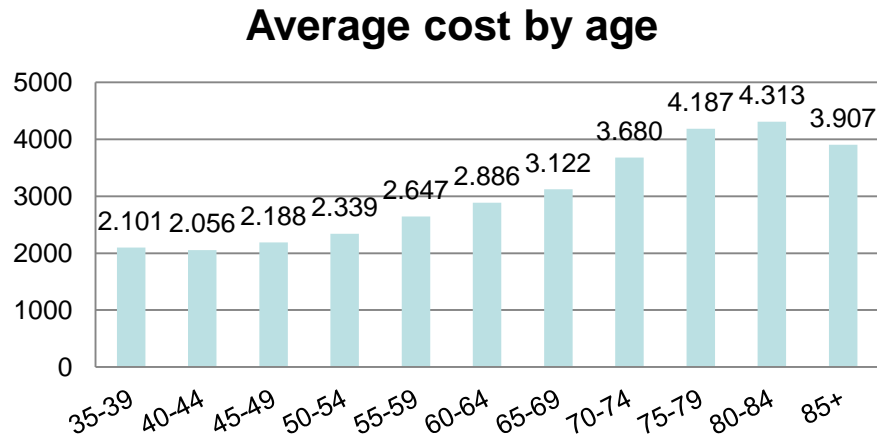
RESULTS

Unrelated pathologies to T2DM

Chronic disease	Overall (%)	Males (%)	Females (%)
Hypertension	73.71	73.23	73.54
Dyspepsia	13.81	11.36	16.70
Prostatic hypertrophy	—	13.48	—
Anxiety	12.75	8.54	18.10
Degenerative joint disease	11.72	7.79	15.79
Atrial Fibrillation	10.40	12.15	8.54
Depression	9.77	5.47	14.78
Malignant neoplasms	8.86	11.17	6.96
Chronic heart disease, other	8.57	10.77	6.09
Emphysema, chronic bronchitis, COPD	8.23	12.09	4.50
Hypothyroidism	6.22	2.31	11.31
Low back pain	5.82	4.34	7.65
Dementia	5.05	4.17	5.80

RESULTS

Costs increase with age until the range of 80-84, where reach a maximum of **4,313€**



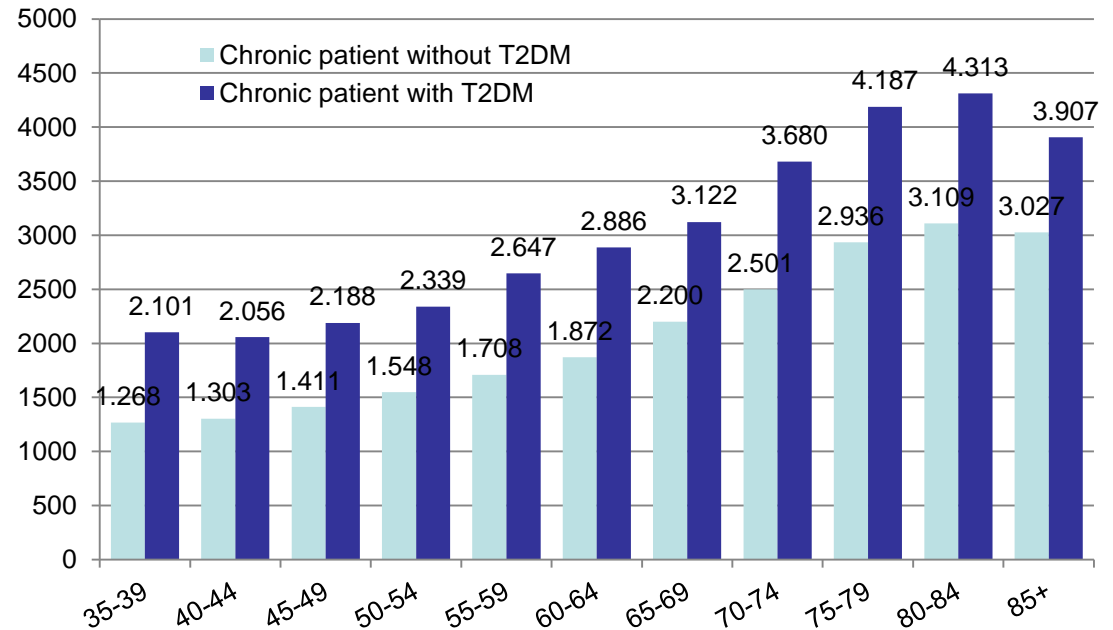
Patients living in more deprived areas spend **468€ more** than those more affluent.

RESULTS (T2DM population vs. chronic population without T2DM)

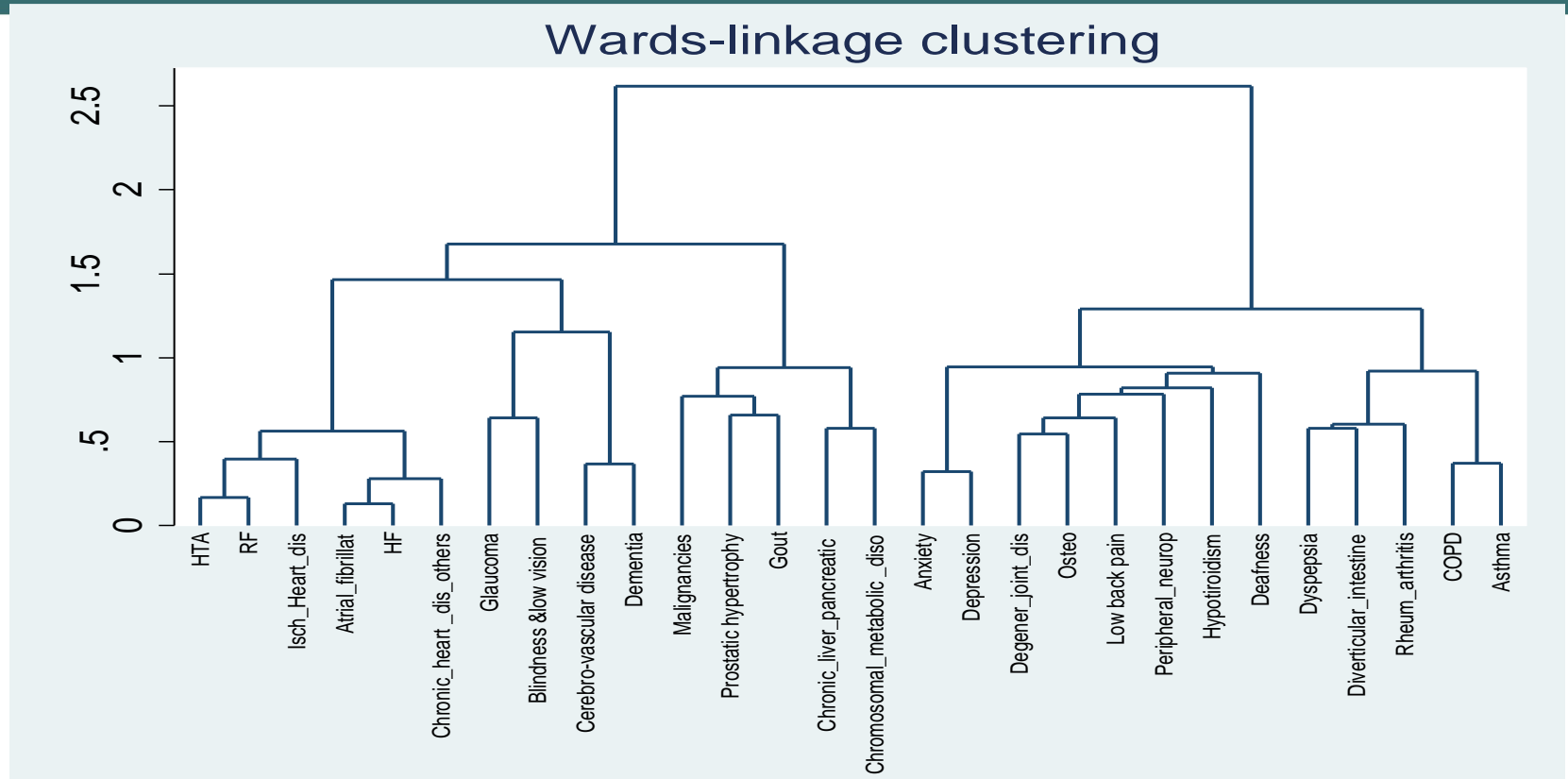
In all age ranges, healthcare costs in patients with T2DM is higher than that for chronic patients without this condition.

On average, a chronic patient without T2DM spent 2037€, nearly **69% less** than a patient with T2DM.

The differences between these two populations were statistically significant for all age ranges.

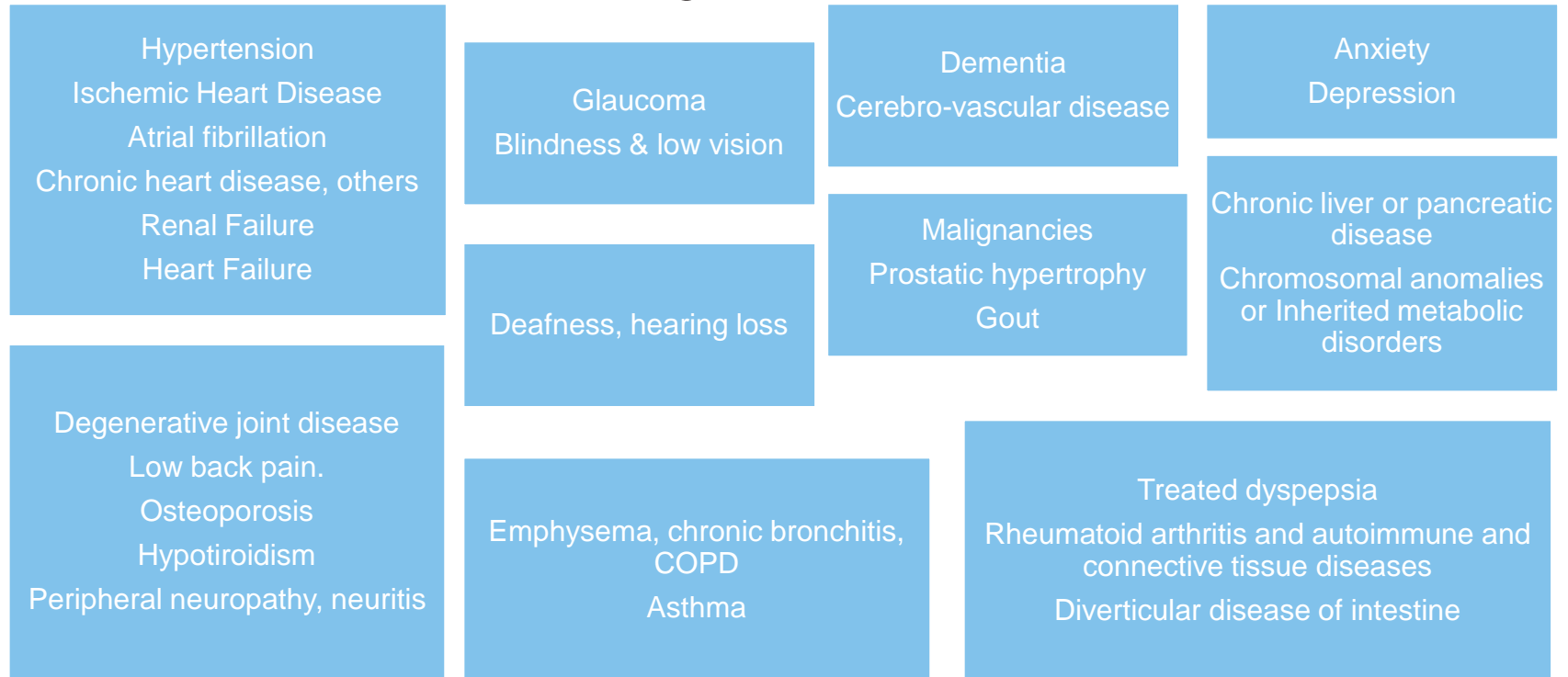


CLUSTER ANALYSIS (I)



CLUSTER ANALYSIS (II)

With the cut point at 0.9, we got 10 clusters:



CONCLUSIONS (I)

General population

- **MULTIMORBIDITY IS THE NORM:** multimorbidity was found in 66.13% of the population aged 65 and over, and increases with age until 85 years.
- **MULTIMORBIDITY IS LINKED TO INEQUALITIES:** the prevalence of multimorbidity was higher in deprived (69.94%) than better-off (60.22%) areas.
- **TACKLING MULTIMORBIDITY IS EXPENSIVE:** multimorbid patients account for 63.55% of total healthcare expenditures.

CONCLUSIONS (II)

T2DM population

- **WE NEED HOLISTIC PERSON-CENTERED CARE MODELS:** the prevalence of multimorbidity was 90.4% between patients with T2DM
- **DIABETES IS A PARADIGMATIC AND EXPENSIVE CHRONIC DISEASE:** a person with T2DM spends 68.5% more than a chronic patient without T2DM.
- **WE MUST TACKLE INEQUALITIES:** in the most disadvantaged socioeconomic strata cost per patient is 468€ (14.9%) more than in the most affluent segment .
- **THE IMPACT OF DIRECT HEALTHCARE COSTS FOR T2DM PATIENTS IS HUGE:** the total annual direct cost amounted to 435.5 million Euros, 12.78% of the public health expenditure in the Basque Country.



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The Joint Action on Chronic Diseases and promoting healthy ageing across the life cycle (JA-CHRODIS)*

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