


Original Research

Direct diabetes-related healthcare expenditures in Slovenia: recent evolution and future projections based on population-level data

Petra Došenović Bonča , Dalibor Gavrić, Karmen Janša & Jože Sambt

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Petra Došenović Bonča
Dalibor Gavrić
Karmen Janša
Jože Sambt

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Economic burden of disease

Diabetes-related healthcare expenditures (payer perspective)

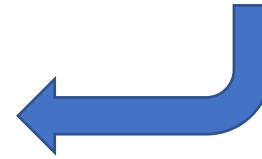
Projections of diabetes-related healthcare expenditures

Conclusions

1. Evolution in the 2019-2022 period

2. Structure of expenditures by:

- sex
- age
- types of healthcare services
- medical conditions



Projections of expenditures up to 2050

- age and gender-related expenditure profiles from 2019
- demographic changes until 2050

Economic burden of disease

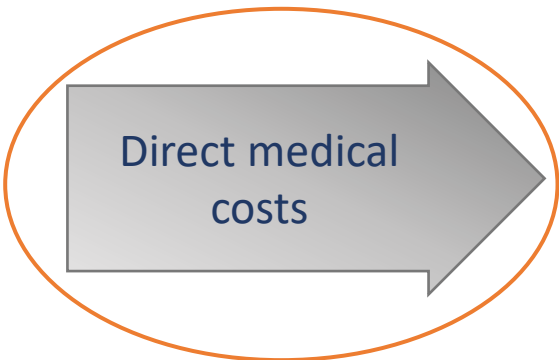


Diagram illustrating various medical conditions and their associated costs:

- eye compl.
- acute compl.
- diabetes excluding compl.
- kidney compl.
- foot compl.
- diabetes & heart diseases
- diabetes & cerebrovascular diseases



Diagram illustrating the impacts of disease on patients, families, employers, the health system, and the entire society:

- Absenteeism
- Presenteeism
- Premature retirement
- Premature mortality
- Work inactivity
- Unemployment
- Lower quality of life
- OOP exp. of patients and their families

Impacts on patients, families, employers, the health system, the entire society

Diabetes-related healthcare expenditures: diabetes and complications

Secondary use of healthcare data:

- the population-level database of the Health Insurance Institute of Slovenia
- claims data structured and organized in a data warehouse
- CHI expenditures + co-payments (complementary VHI)



Primary care
Outpatient care
Inpatient care
Rehabilitation
Drugs
Medical devices

Diabetes-related healthcare expenditures: diabetes and complications

Seven groups of medical conditions

1. diabetes excluding complications
2. acute complications of diabetes
3. diabetic kidney complications
4. diabetic eye complications
5. diabetic foot complications
6. diabetes and heart diseases
7. diabetes and cerebrovascular diseases

medical examinations in primary care, emergency care, or diabetes specialist outpatient care, hospital treatment for diabetes, drugs, and medical devices for the management of diabetes

medical examinations in emergency care and hospital treatment for hypoglycemia, diabetic ketoacidosis, or hyperosmolar syndrome

medical examinations in outpatient urgent care or outpatient specialist care in the fields of nephrology and internal medicine, hospital treatment for chronic kidney disease, diabetic nephropathy, kidney transplantation, dialysis, drugs for chronic kidney disease

PATIENTS:

1. receiving drugs used in diabetes (ATC code A10)
2. not on drugs, but visiting diabetes outpatient clinic
3. included in diabetic retinopathy screening

15% of patients manage diabetes only by non-pharmacological measures and a healthy lifestyle

(Paulin et al. (2014): Ekonomsko breme sladkorne bolezni v Sloveniji 2012. NIJZ)

Diabetes-related healthcare expenditures: diabetes and complications

Seven groups of medical conditions

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medical examinations in ophthalmology specialist outpatient care and hospital treatment for diabetic retinopathy or other retinal diseases, blindness or visual impairment, screening for diabetic retinopathy, medical devices for blind and visually impaired people

medical examinations in outpatient urgent care or outpatient specialist care in the fields of neurology, angiology, surgery, and physiatry, hospital treatment for diabetic foot, diagnostic and therapeutic angiology procedures, leg amputation, rehabilitation after leg amputation, drugs for neuropathic pain, medical devices needed after leg amputation

PATIENTS:

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Diabetes-related healthcare expenditures: diabetes and complications

Seven groups of medical conditions

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medical examinations in outpatient urgent care or outpatient specialist care in the fields of cardiology, internal medicine, and cardiac surgery, hospital treatment for acute myocardial infarction, angina pectoris, chronic ischemic heart disease, or congestive heart failure, rehabilitation after myocardial infarction or cardiac surgery, drugs for heart diseases

medical examinations in outpatient urgent care or outpatient specialist care in the fields of neurology, neurosurgery, angiology, internal medicine, or physiatry, hospital treatment for acute ischemic stroke, transient ischemic attack, or atherosclerosis of carotid or cerebral arteries, rehabilitation after stroke, antithrombotic drugs

PATIENTS:

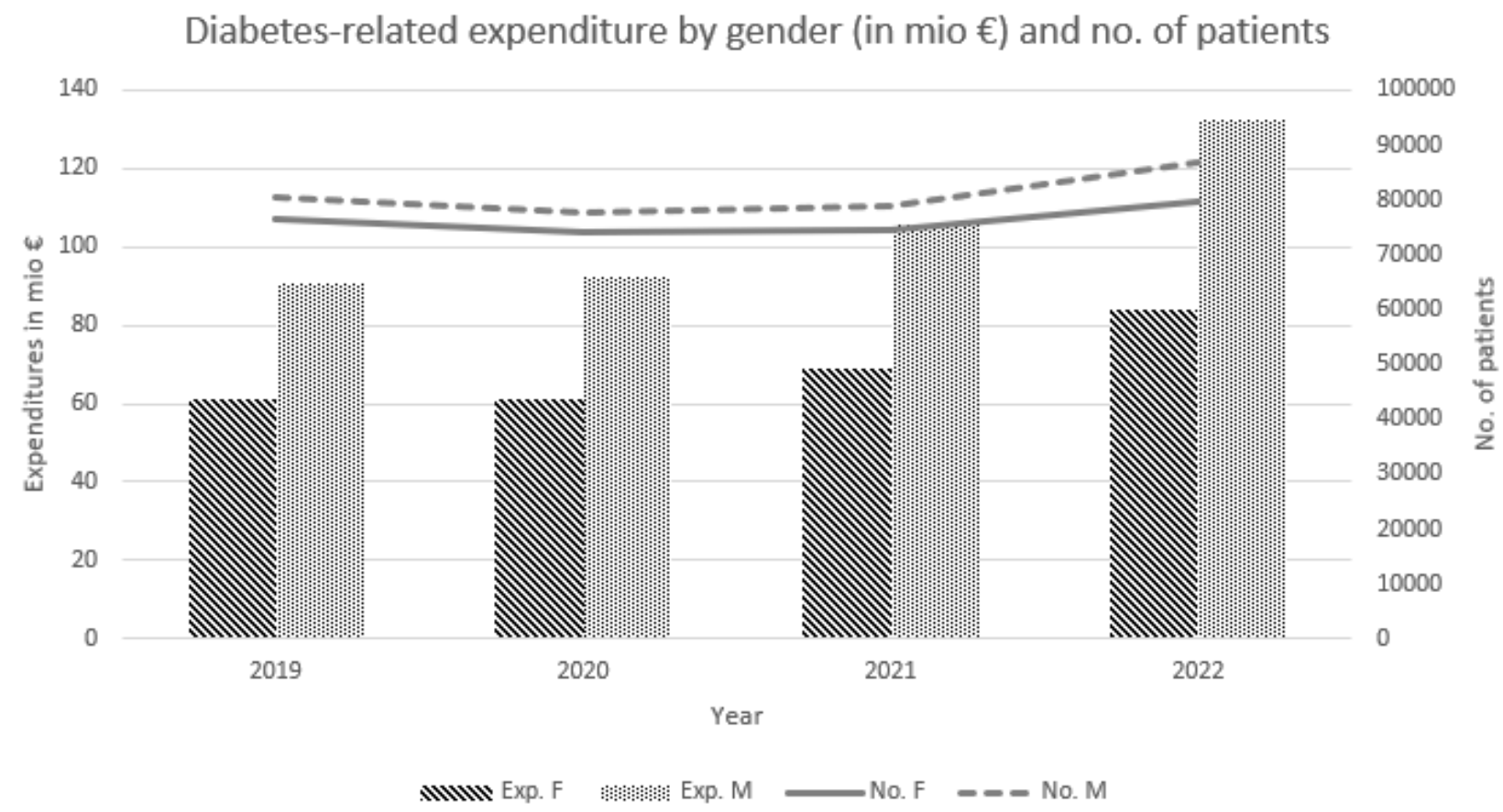
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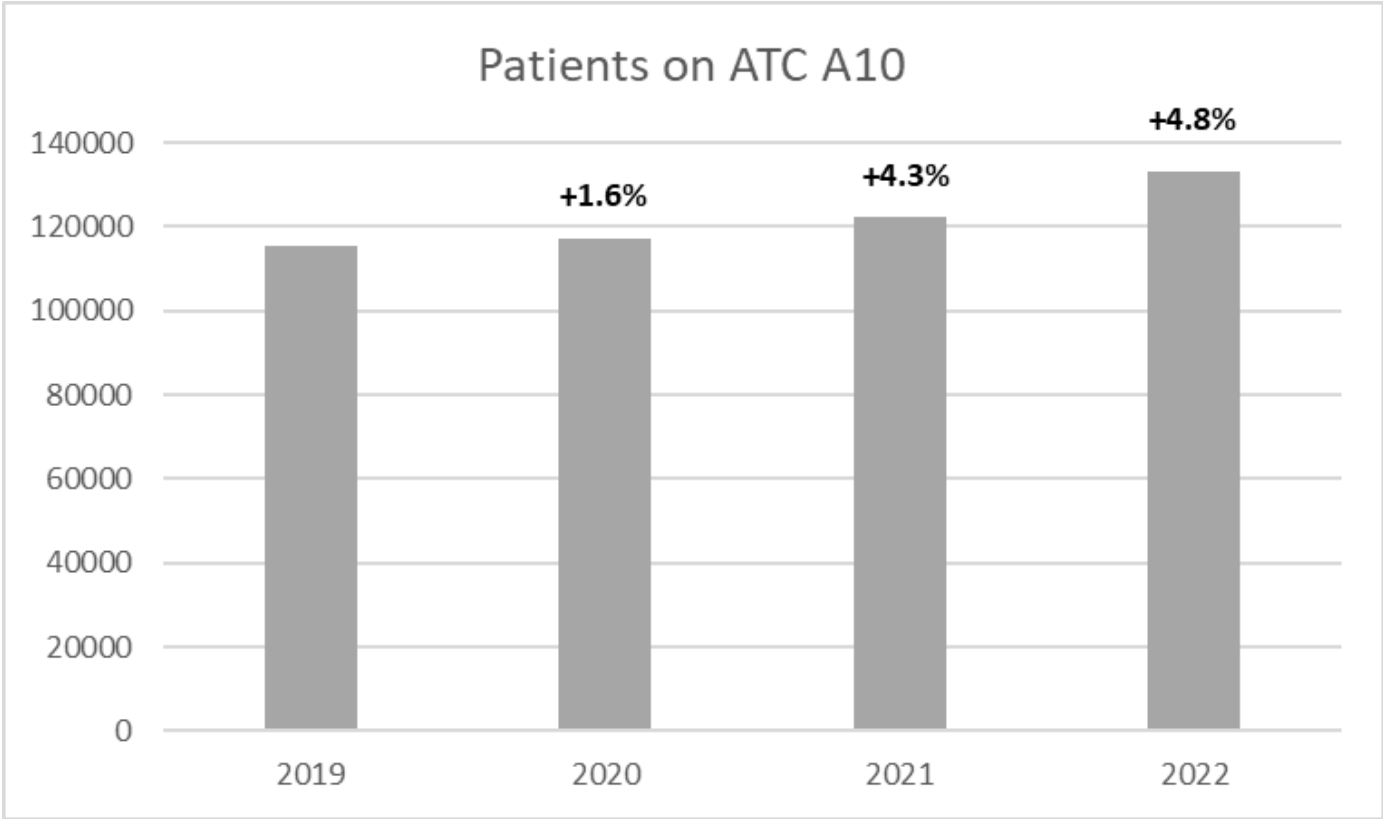
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Diabetes-related healthcare expenditures: diabetes and complications

		2019	2020	2021	2022	Average 2019-2022
Expenditures in million € (annual or average annual growth)	Overall direct diabetes-related healthcare expenditures	151.86	153.63 (1%)	174.70 (14%)	216.27 (24%)	174.12 (13%)

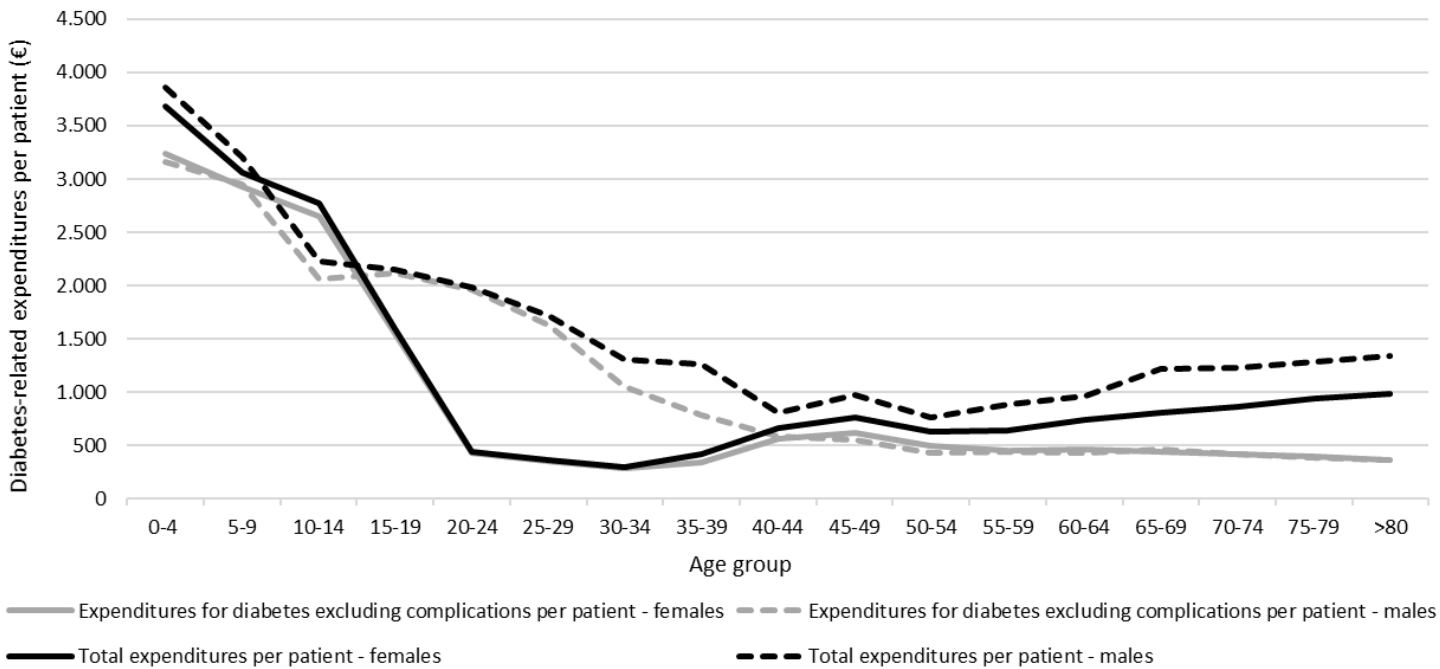
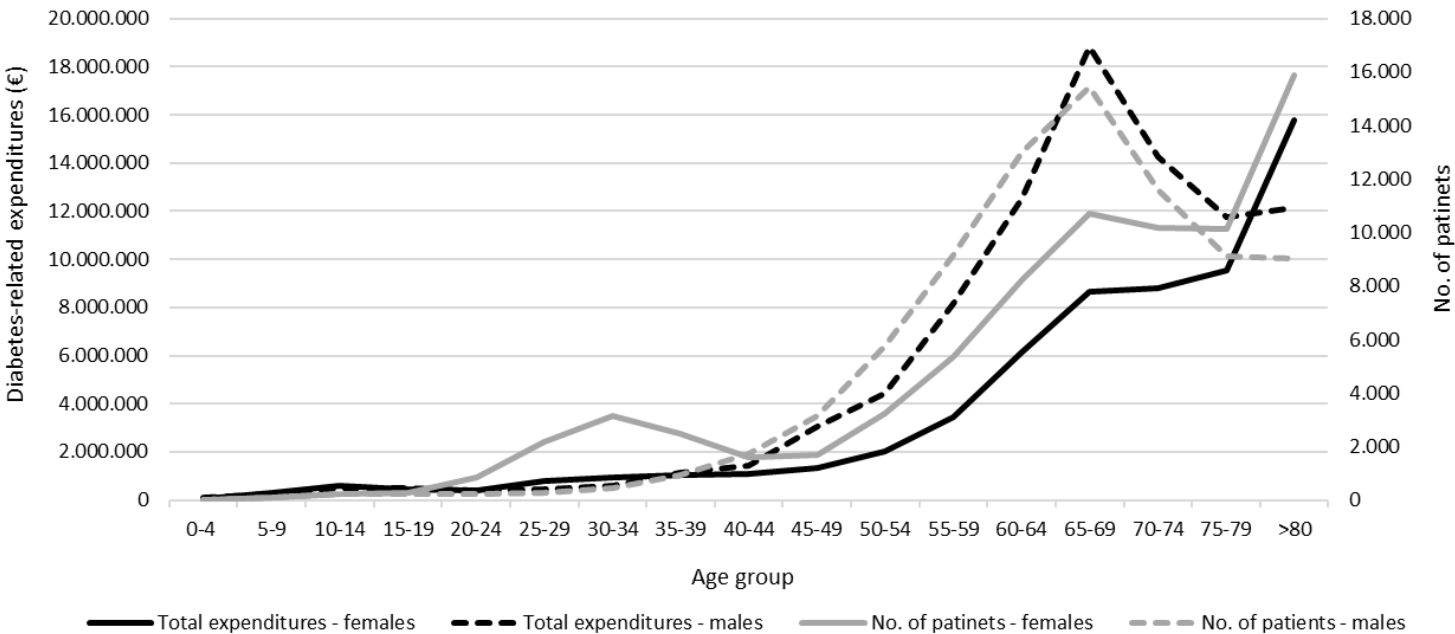


Diabetes-related healthcare expenditures: diabetes and complications

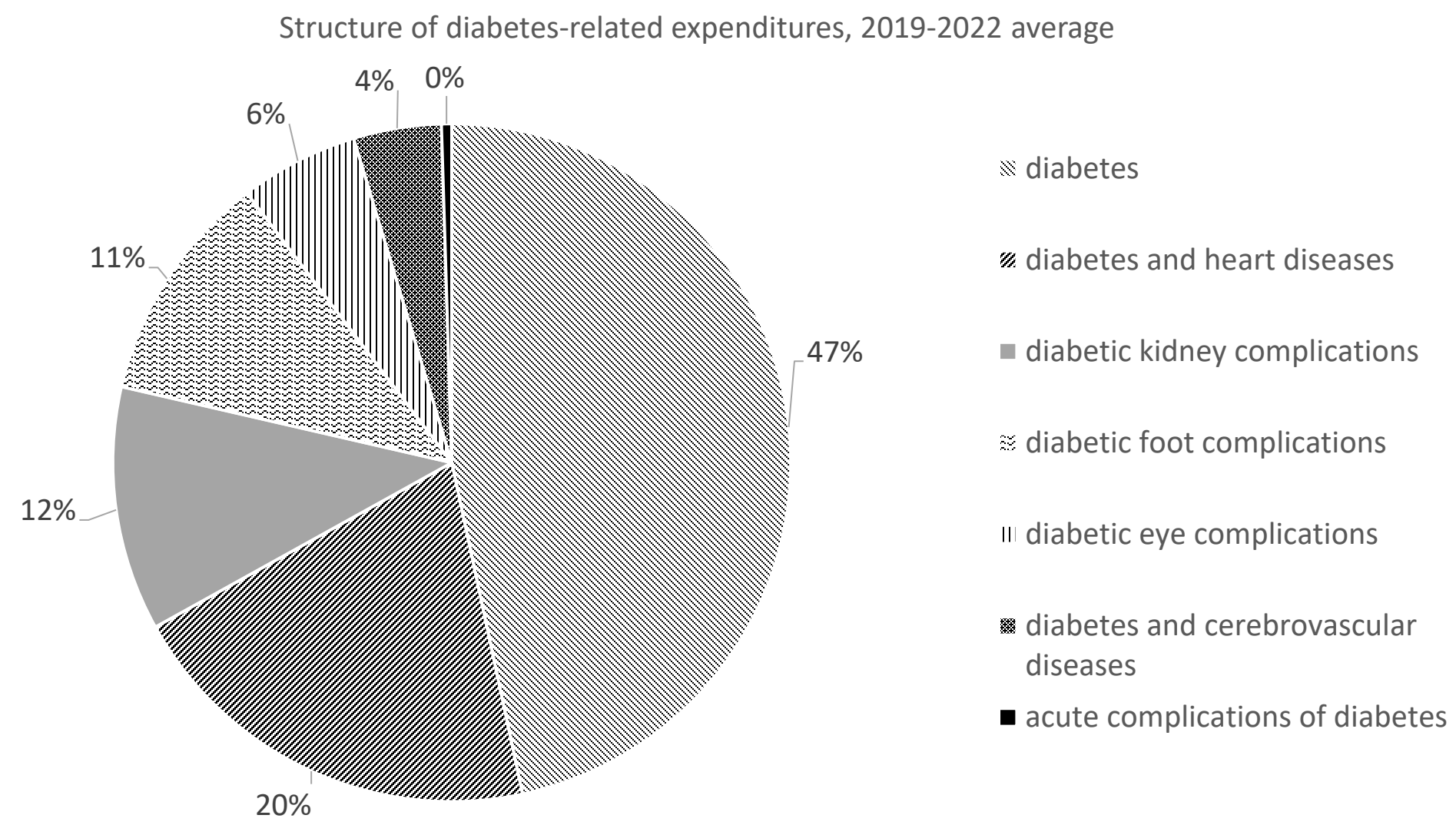


		Average 2019-2022
Expenditures in million € <i>(average annual growth)</i>	Total	174.12 <i>(13%)</i>
	Female	68.88 <i>(11%)</i>
By gender	Male	105.23 <i>(14%)</i>
Expenditures per patient in € <i>(average annual growth)</i>	Total	1,108 <i>(10%)</i>
	Female	905 <i>(9%)</i>
By gender	Male	1,300 <i>(11%)</i>

Diabetes-related healthcare expenditures: diabetes and complications

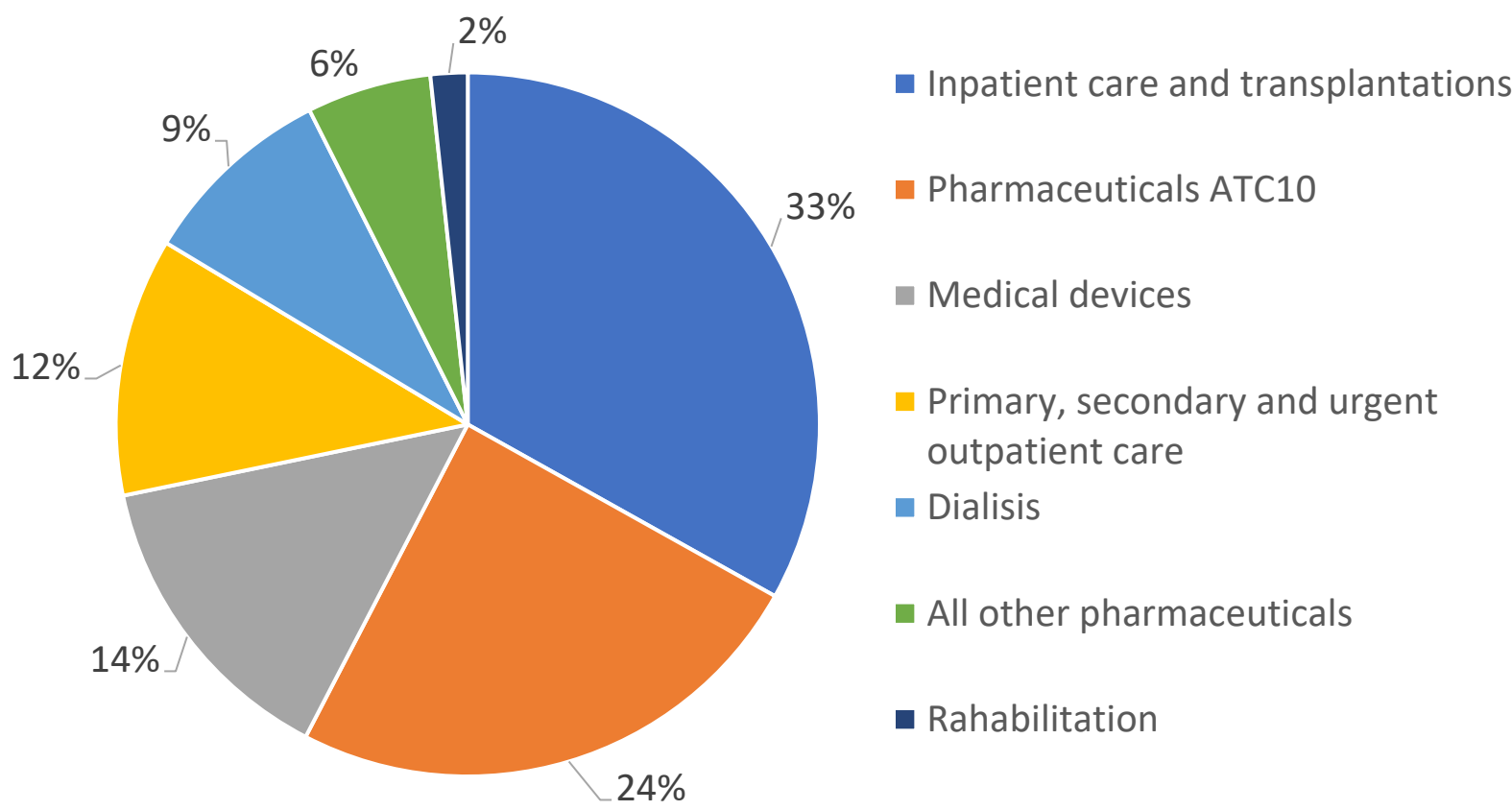


Diabetes-related healthcare expenditures: diabetes and complications



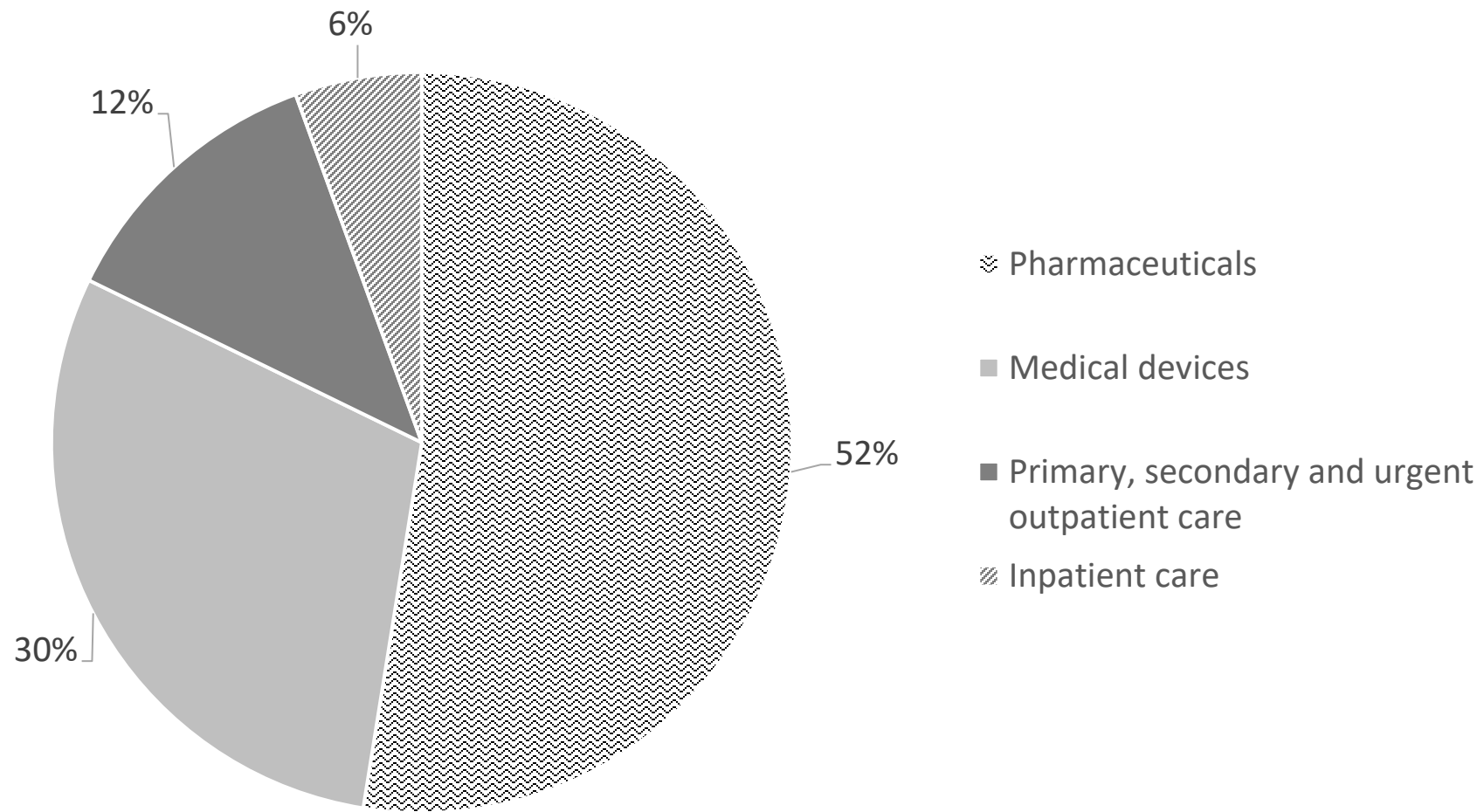
Diabetes-related healthcare expenditures: diabetes and complications

Structure of diabetes-related expenditures according to type of health care services and products, 2019-2022 average



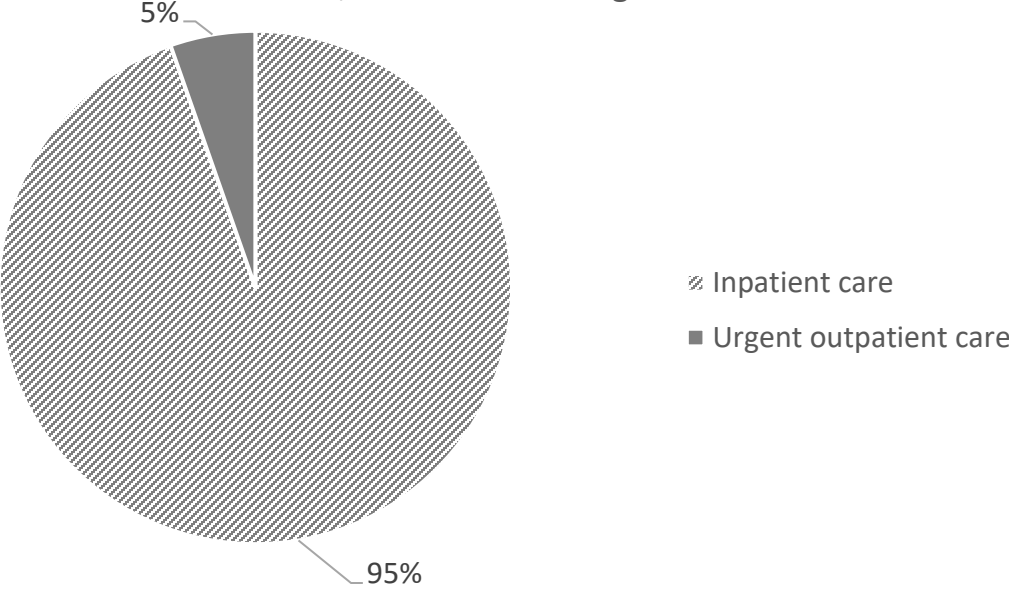
Diabetes-related healthcare expenditures: diabetes and complications

Structure of diabetes expenditures without complications, 2019-2022 average

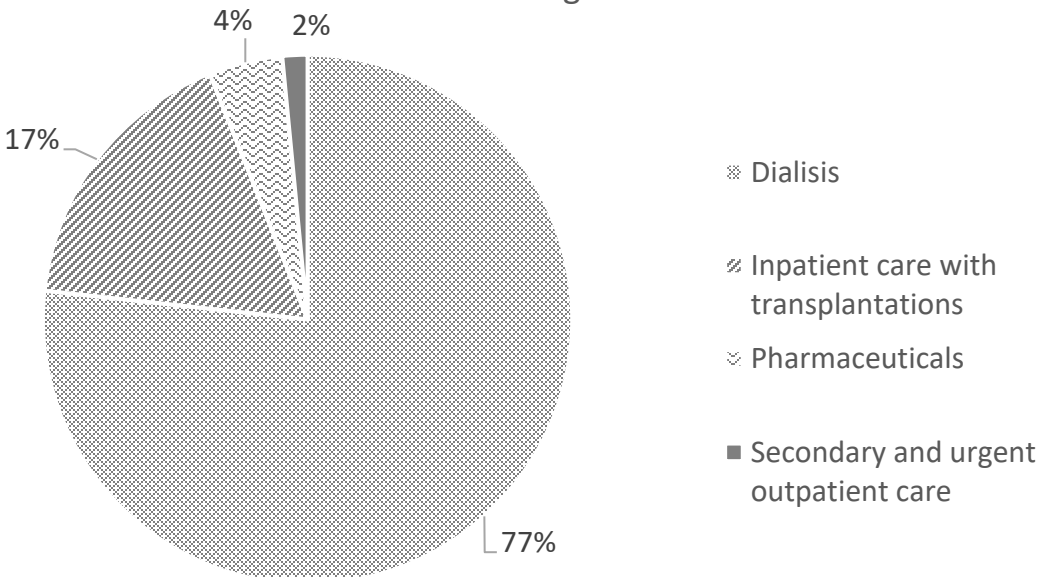


Diabetes-related healthcare expenditures: diabetes and complications

Structure of expenditures due to acute complications of diabetes, 2019-2022 average

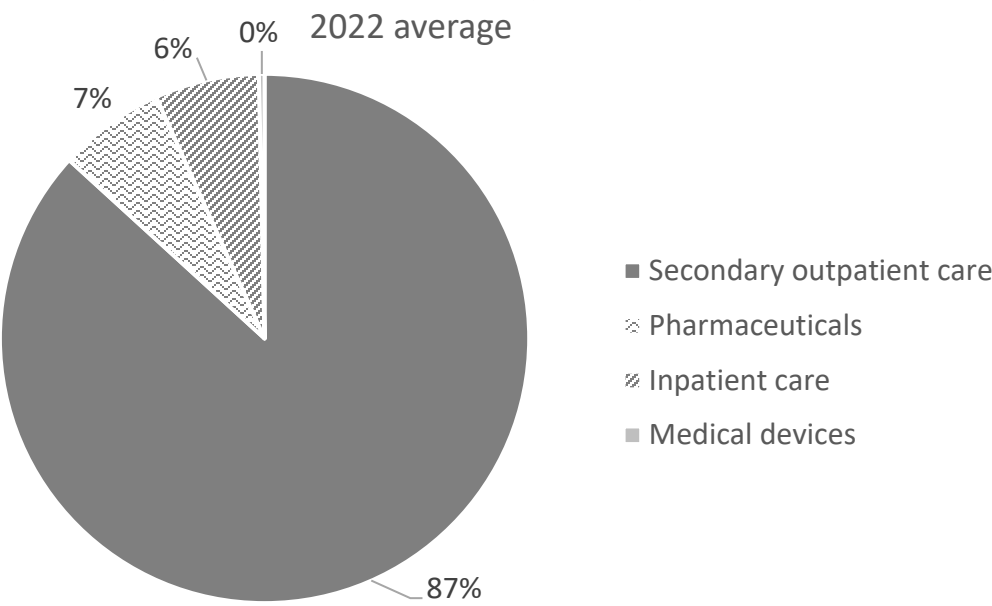


Structure of expenditures on diabetic kidney complications, 2019-2022 average

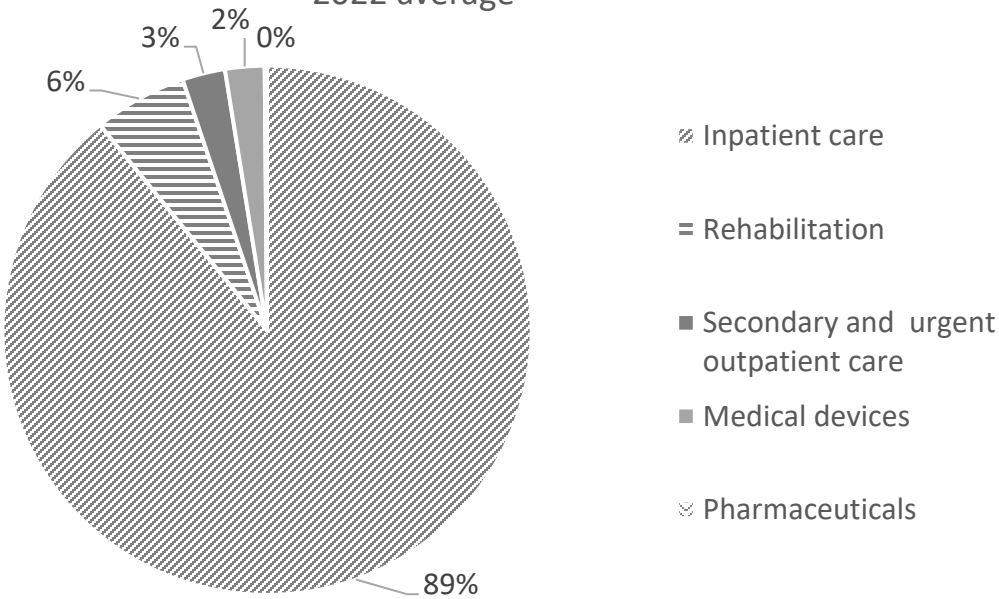


Diabetes-related healthcare expenditures: diabetes and complications

Structure of expenditures on diabetic eye complications, 2019-

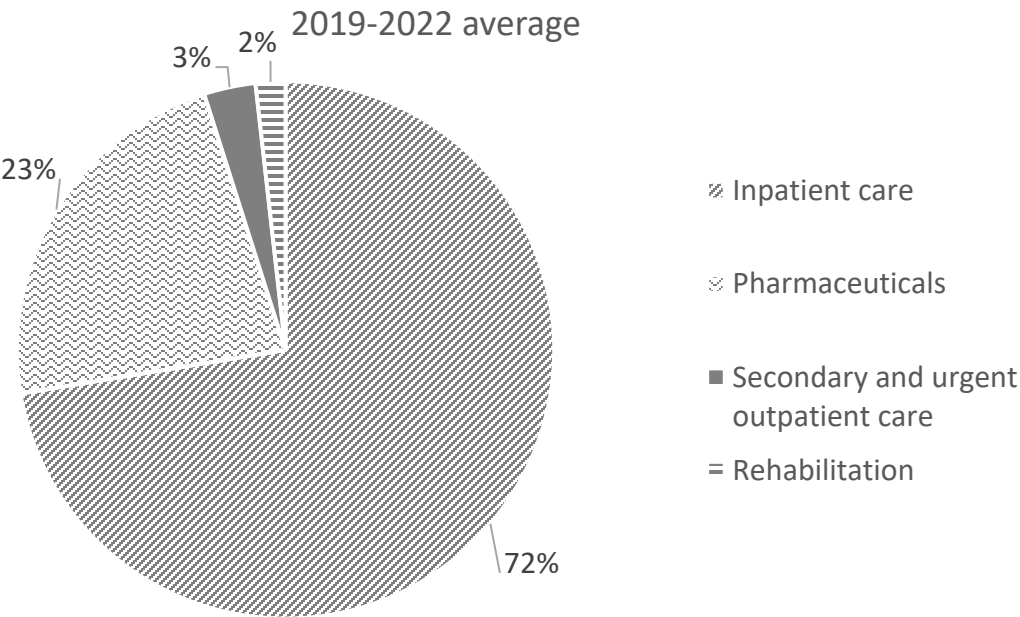


Structure of expenditures on diabetic foot complications, 2019-
2022 average

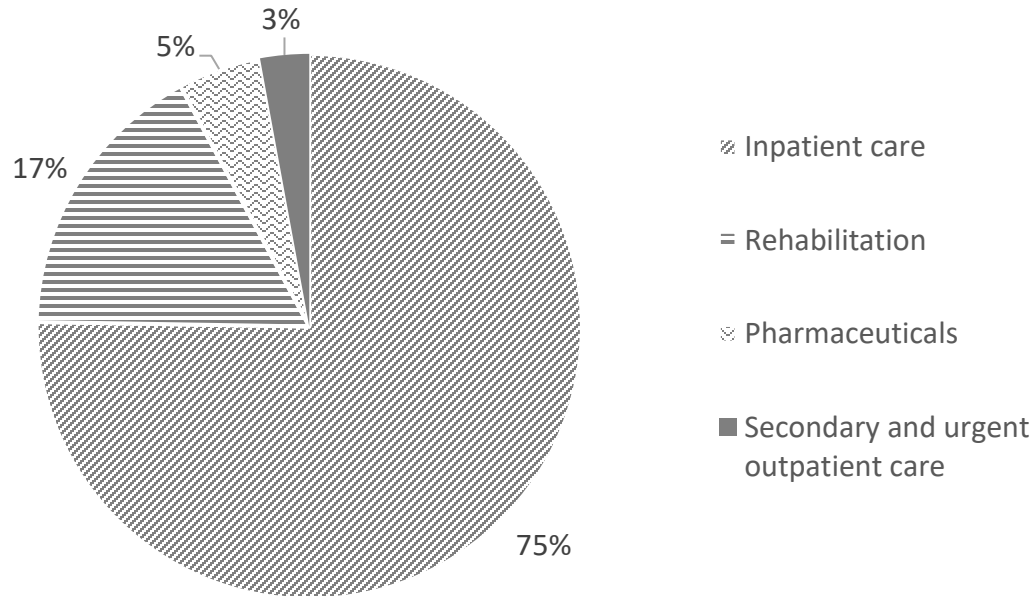


Diabetes-related healthcare expenditures: diabetes and complications

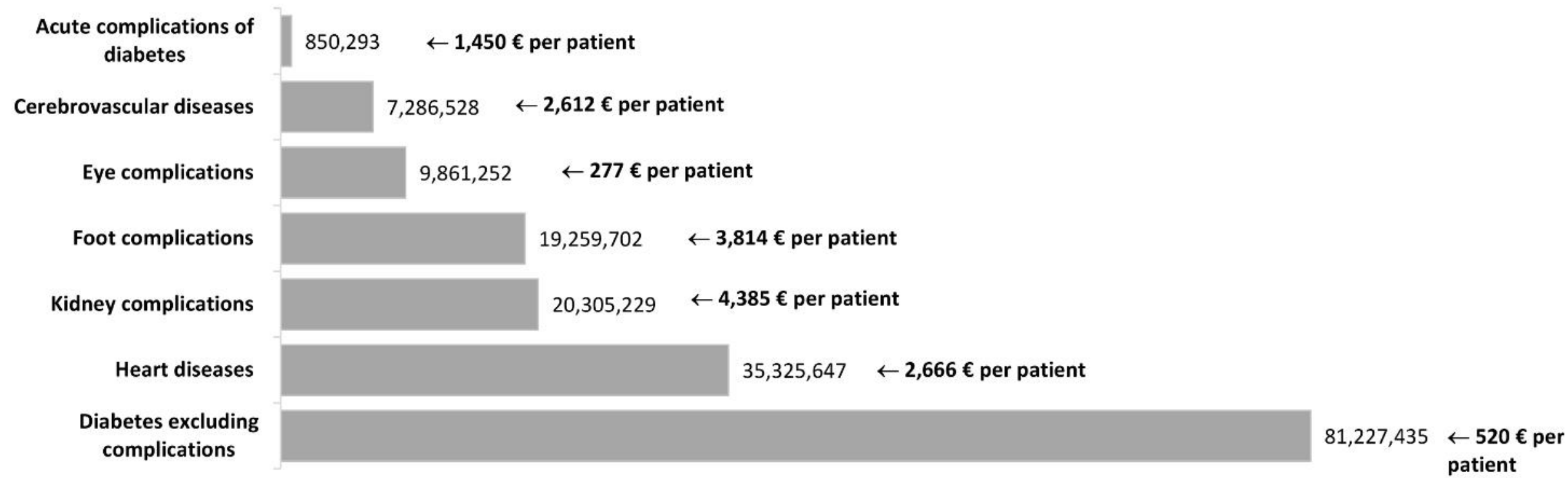
Structure of expenditures on diabetes and heart diseases



Structure of expenditures on diabetes and cerebrovascular diseases , 2019-2022 average



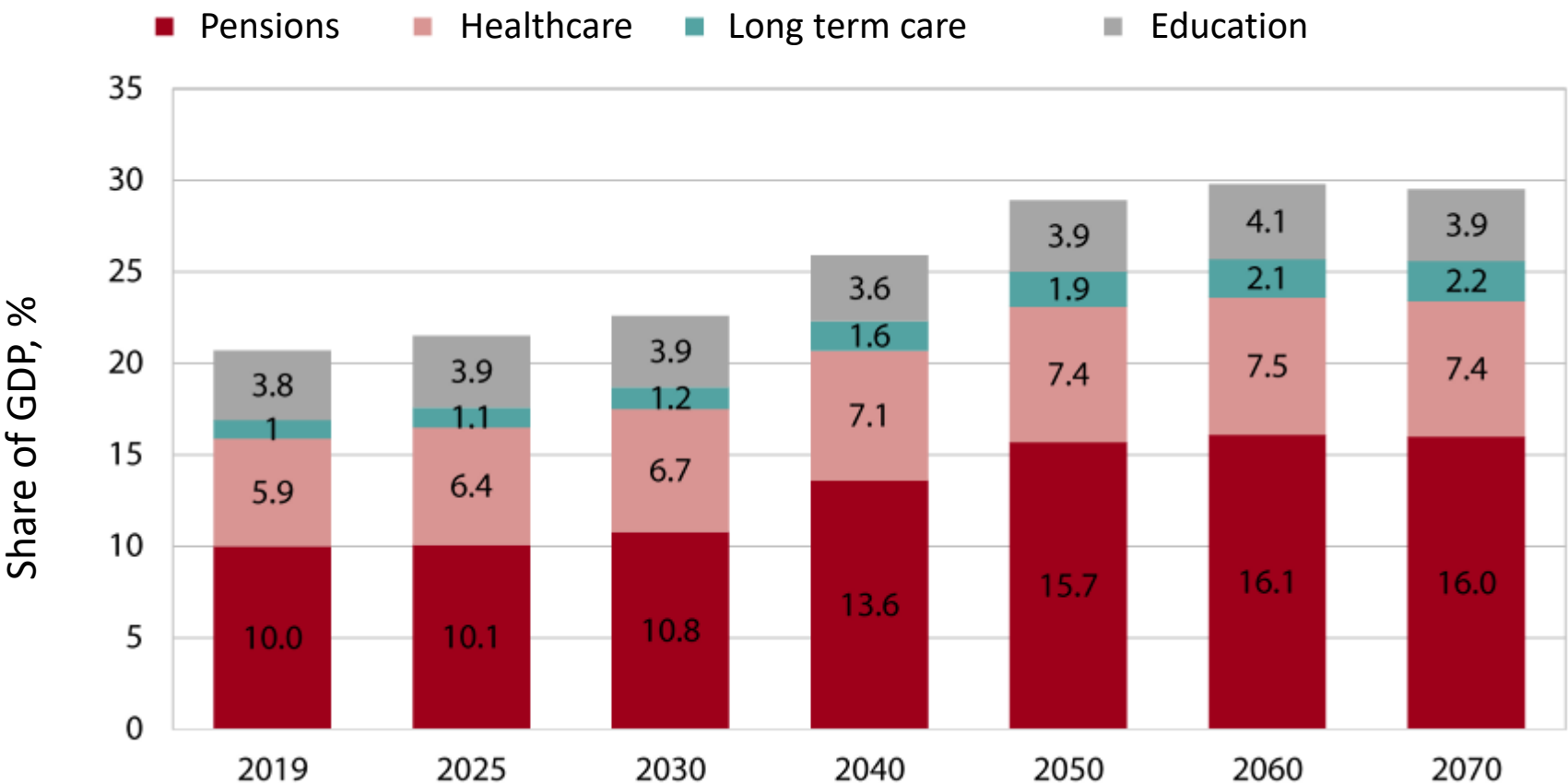
Diabetes-related healthcare expenditures: diabetes and complications



Projections of direct diabetes-related healthcare expenditures



Projections of public expenditure related to ageing, Slovenia, 2019-2070 (baseline scenario)



Source: Ageing report 2021, European Commission; mag. Eva Helena Šarec (2022): Trendi v virih in izdatkih za zdravstvo

Projections of direct diabetes-related healthcare expenditures



Slovenia	2019	2030	2040	2050	2060	2070
Life expectancy - M	78.7	80.3	81.8	83.3	84.6	85.9
Life expectancy - Ž	84.5	85.8	87.1	88.2	89.4	90.4
Share of population aged over 65 years	20.0	24.7	28.0	30.8	31.3	30.4
Share of population aged over 80 years relative to population aged over 15	8.9	11.9	17.3	21.9	25.4	26.7
Growth of BDP p.c.	1.7	2.3	1.3	1.3	1.7	1.6

Projections of direct diabetes-related healthcare expenditures



Ageing report:

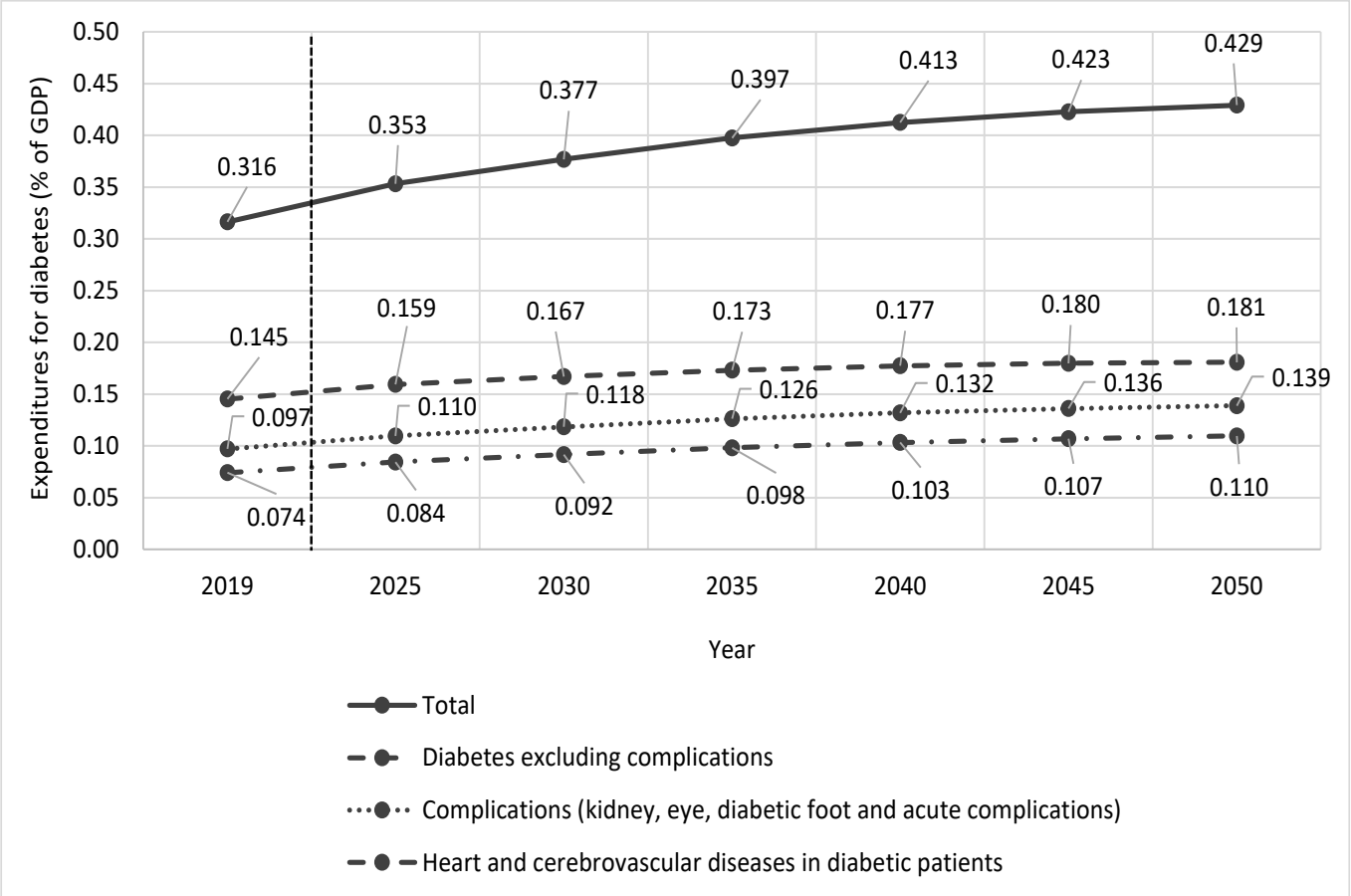
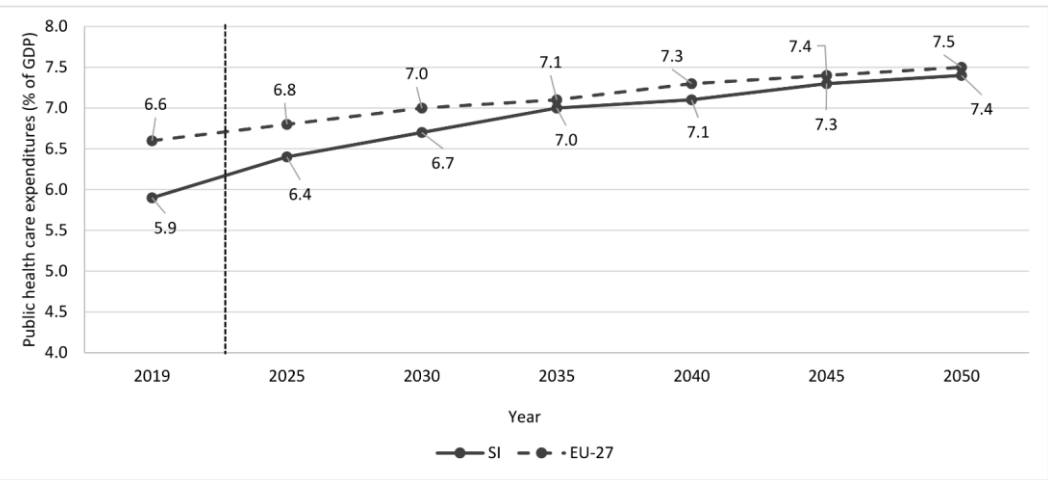
→ 11 different scenarios

→ **Baseline scenario (conservative)**

- average expenditures by gender and age groups are increasing in line with the growth of GDP per capita
- healthcare expenditures are driven by the assumption that half of the future gains in life expectancy are spent in good health
- income elasticity of healthcare spending will converge linearly from 1.1 in 2019, to 1.04 in 2050, and to unity by the end of the projection period, which is 2070

Forecasts for diabetes: take into account demographic changes and increasing healthy life expectancy but ignore other influencing factors, such as technological progress and changes in incidence of diabetes

Projections of direct diabetes-related healthcare expenditures



2019-2050: + 1.5 % points



Conclusions

1. Average annual expenditures (CHI + co-payments) in the 2019-2022 period:
 - **174 million €** (**13%** average annual growth rate)
 - **4.8%** of overall current health expenditures (CHI + co-payments)
2. Average annual expenditures per patient in the 2019-2022 period : **1,108 €** (**10%** average annual growth rate)
3. **Over 50%** of expenditures due to complications
4. **Less than a quarter** of expenditures due to ATC10 drugs
5. More noticeable growth in expenditure as a share of GDP up to 2035, slower growth by 2050.

Close monitoring of the expenditures due to treatment of diabetes and its complications clearly points to certain clinical conditions (e.g. dialysis and amputations) that need closer attention (prevention, early detection and control of risk factors by reaching target values).

Expenditure monitoring supports the planning of future expenditures and the timely provision of the necessary financial and other resources for diabetes treatment and control.

Knowing all the elements of the economic burden of diabetes would enable an evidence-based assessment of the justification of new approaches for diabetes treatment and control.