

Estimated clinical and economic burden of obesity in Japan over the next 5 years

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Aims

- In this modelling study, we estimated the current prevalence and costs associated with selected obesity-related complications (ORCs) in the Japanese population, and the projected prevalence and costs by 2029.

Introduction

- Obesity is a chronic disease that has a considerable economic impact,¹ is associated with a risk of complications² and is increasing in prevalence worldwide.³
- The prevalence of obesity is also increasing in Japan.⁴
- Compared with people of European descent, people of Asian descent generally have higher levels of body fat, particularly visceral adipose tissue, for a given body mass index (BMI), which is associated with corresponding higher risks of ORCs.⁵

Methods

- We employed a previously published model originally developed using a UK cohort.⁶ The model generates incidence estimates and associated direct healthcare costs for 10 ORCs in a given cohort defined by age range, sex distribution and BMI range.
 - In this analysis, the cohort in the model represents the proportion of the general population in Japan living with obesity.
 - The risk engine behind the simulation is based on individual risk prediction on the basis of BMI, weight change, age, sex, smoking status, baseline comorbidities and cardiovascular history.
 - The 10 ORCs included in the model are asthma, atrial fibrillation, chronic kidney disease (CKD), dyslipidaemia, heart failure, hip/knee osteoarthritis, hypertension, sleep apnoea, type 2 diabetes (T2D) and unstable angina/myocardial infarction (MI).
 - Direct healthcare costs comprised outpatient and emergency room visits, inpatient care and pharmacy costs.
- We used an adaptation of the UK risk engine that reflects the higher ORC risk for a given BMI in Asian populations.⁷
- Data on population size and age and sex distribution in Japan were obtained from the e-Stat portal site for Japanese government statistics.
 - In line with this, the size of the general population in Japan was assumed to be 125 million people.
- Obesity and ORC prevalence data were obtained from the Japanese Medical Data Vision electronic health record (EHR) database, and cost estimates were from the IQVIA claims database and studies identified in a targeted literature review.
 - Costs from the studies were converted to estimated costs in 2024.
- Based on data from the general population, the study population was assumed to be 56.9% men and 43.1% women, aged between 20 and 69 years, and with a BMI in the range of 25–50 kg/m², which is in alignment with Japanese guidelines that define a BMI of ≥25 kg/m² as the lower threshold for obesity.⁸
- The burden of obesity was estimated for 2024 and for 2029. The prevalence of ORCs in 2029 was estimated based on individuals' weight in 2024.

Results

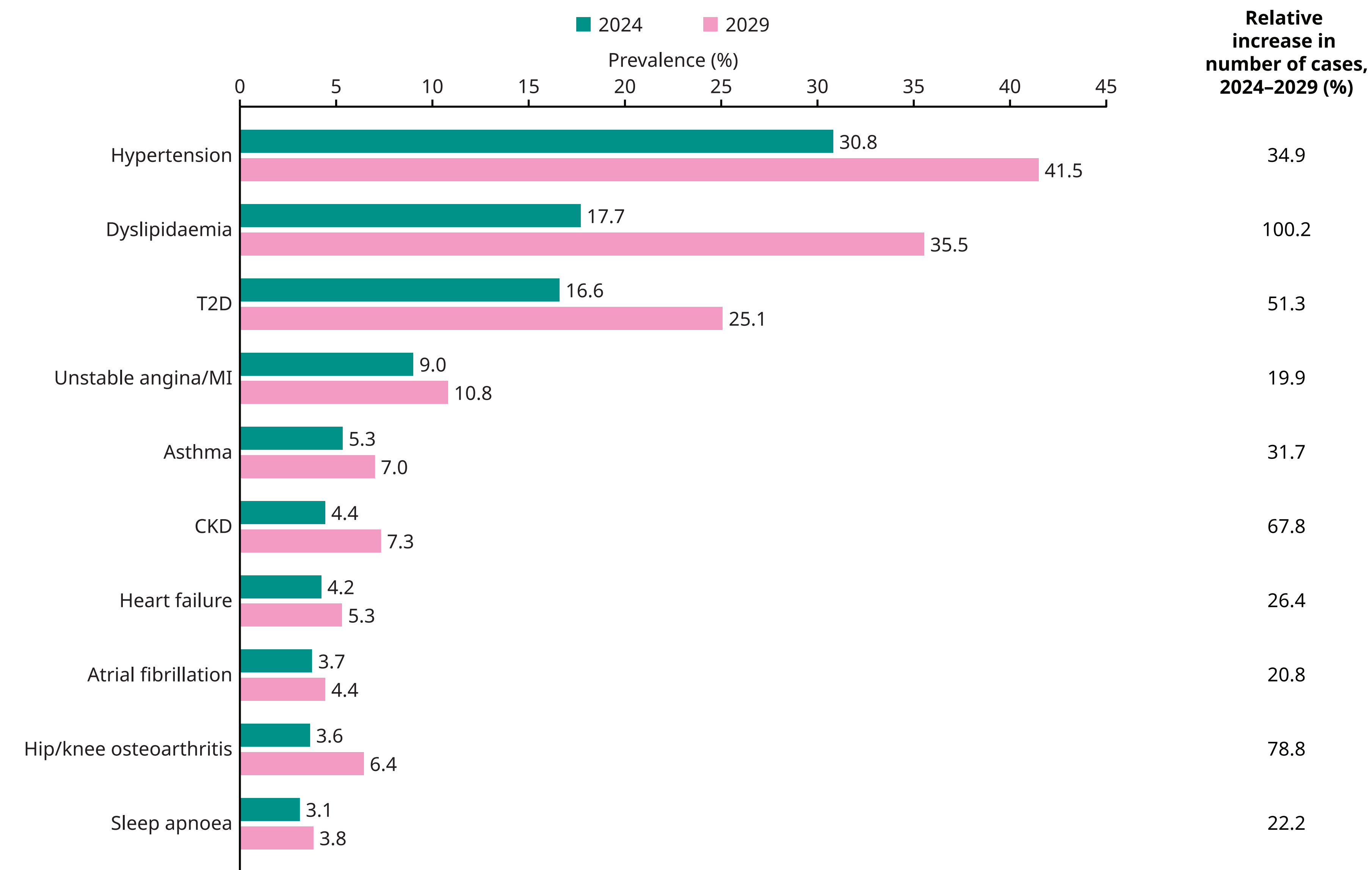
Estimates for 2024

- It was estimated that 27 million people in Japan were aged 20–69 years with a BMI of 25–50 kg/m².
- The ORCs with the highest estimated prevalence in this population in 2024 were hypertension (30.8%), dyslipidaemia (17.7%) and T2D (16.6%) (**Figure 1**).
- The total direct healthcare costs associated with the 10 ORCs of interest in 2024 were estimated at approximately 46.4 billion US dollars (USD) (6926 billion Japanese yen [JPY]; **Figure 2**).
 - The highest cost contributions were from T2D (15.7 billion USD), unstable angina/MI (12.8 billion USD) and heart failure (10.5 billion USD).

Estimates for 2029

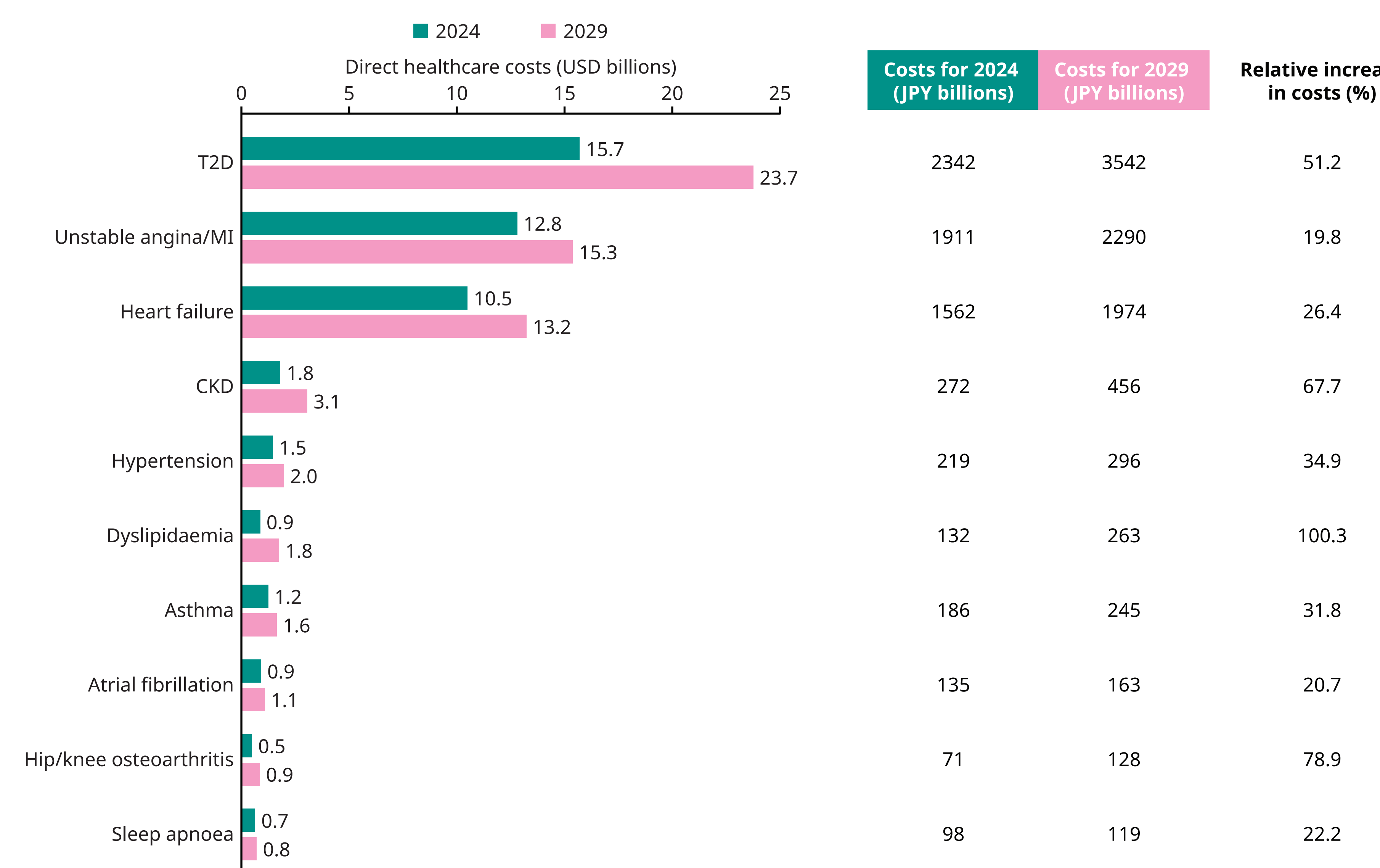
- The prevalence of all 10 ORCs is projected to increase by 2029 as the 2024 population ages (**Figure 1**).
- Hypertension, dyslipidaemia and T2D are projected to remain the most prevalent ORCs.
 - Between 2024 and 2029, the model estimated that 2.9 million incident cases of hypertension, 4.6 million cases of dyslipidaemia and 2.3 million cases of T2D would occur.

Figure 1: Estimated prevalence of ORCs in Japan in 2024 and 2029



CKD, chronic kidney disease; MI, myocardial infarction; ORC, obesity-related complication; T2D, type 2 diabetes.

Figure 2: Estimated direct healthcare costs associated with ORCs at a national population level in Japan in 2024 and 2029



CKD, chronic kidney disease; JPY, Japanese yen; MI, myocardial infarction; ORC, obesity-related complication; T2D, type 2 diabetes; USD, US dollar.

- The total direct healthcare costs associated with the 10 ORCs in 2029 were estimated as 63.5 billion USD (9475 billion JPY).
 - T2D was estimated to contribute 23.7 billion USD, unstable angina/MI 15.3 billion USD and heart failure 13.2 billion USD (**Figure 2**).
- The ORCs with the greatest relative increases in prevalence and costs between 2024 and 2029 were dyslipidaemia (100% increase), hip/knee osteoarthritis (79% increase) and CKD (68% increase; **Figure 1** and **Figure 2**).

Strengths and limitations

- Our analysis was based on a published model that has been adapted for use in different geographic regions.
- EHR databases represent individuals who require the use of health services, which may result in overestimates of ORC prevalence and mean that our results are not completely generalizable to the Japanese population.

- The model did not account for new cases of obesity and considered only a limited selection of ORCs. Consequently, the projected direct healthcare costs associated with ORCs in our analysis may be an underestimate.

Conclusions

- As a result of incident cases of ORCs, the direct healthcare costs associated with obesity in Japan are projected to increase considerably over the next 5 years.
- Effective weight management strategies for at-risk individuals may limit the impact of obesity on the healthcare system in Japan.

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Disclosures:

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