



Prevalence and Economic Burden for Diabetic Multimorbid Patients in China :Based on Longitudinal Claims Data

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Poster Code

Introduction

➤ Diabetes is a major public health concern throughout the world.

- In 2021, around 537 million adults were affected by the disease globally, causing approximately 6.7 million deaths. The healthcare costs associated with diabetes are enormous, reaching up to \$966 billion.
- China has the highest number of people living with diabetes, experiencing approximately 1.4 million deaths per year and medical costs of \$165.3 billion.

➤ More than 90% of diabetic patients have at least one multimorbidity

- Multimorbidity is a medical condition where a patient has two or more chronic conditions at the same time.
- Chronic poor glycemic control in diabetic patients can lead to multimorbidity, including macrovascular, organ, and peripheral neuropathy. Moreover, medical costs for diabetes patients with multimorbidity are nine times higher than per capita health care expenditures.

Study Design and Methods

➤ Data Sources

- This study used cohort data from a chronic disease management database and health insurance claim database from 2014 to 2019 from a city in eastern China.

➤ Sample Population

- This study selected a sample population of diabetic patients who were enrolled in the chronic disease management database in 2014 and had a visit in the health insurance claims database for six consecutive years (2014-2019).

➤ Definition of diabetic multimorbidity

- Step one: disease systems with a high frequency (>20%) of diabetes multimorbidity studies were screened through a literature review.
- Step two: multimorbidity conditions with a visit rate of >1% in 2014 were screened for study based on actual healthcare utilization by diabetic patients in the sample area.

➤ Statistical analysis

- Data cleaning and analysis of the prevalence and economic burden of multimorbidity were performed using Stata 17.0.
- Cluster analysis of multimorbidity in diabetic patients using Kmeans algorithm in the Python 3.0 and Scikit-learn 1.2.2.

Results

➤ Economic Burden of Diabetes Multimorbidity

- Between 2014 and 2019, the share of healthcare costs for multimorbidity in diabetes grows from 31.8% to 34.2%, and the average healthcare cost of \$903.2 increases to \$1,674.2.
- In the sample population, nine diseases had per capita medical costs of more than \$700 in 2019 (See Figure 2).
- The highest average medical costs in 2019 were for cerebrovascular disease sequelae (\$3,860.8), followed by cerebral infarction (\$2,768.8), renal failure (\$1,543.9), chronic obstructive pneumonia (\$1,374.8) and chronic ischemic heart disease (\$1,017.2).

Figure 1 - Prevalence of diabetes multimorbidity

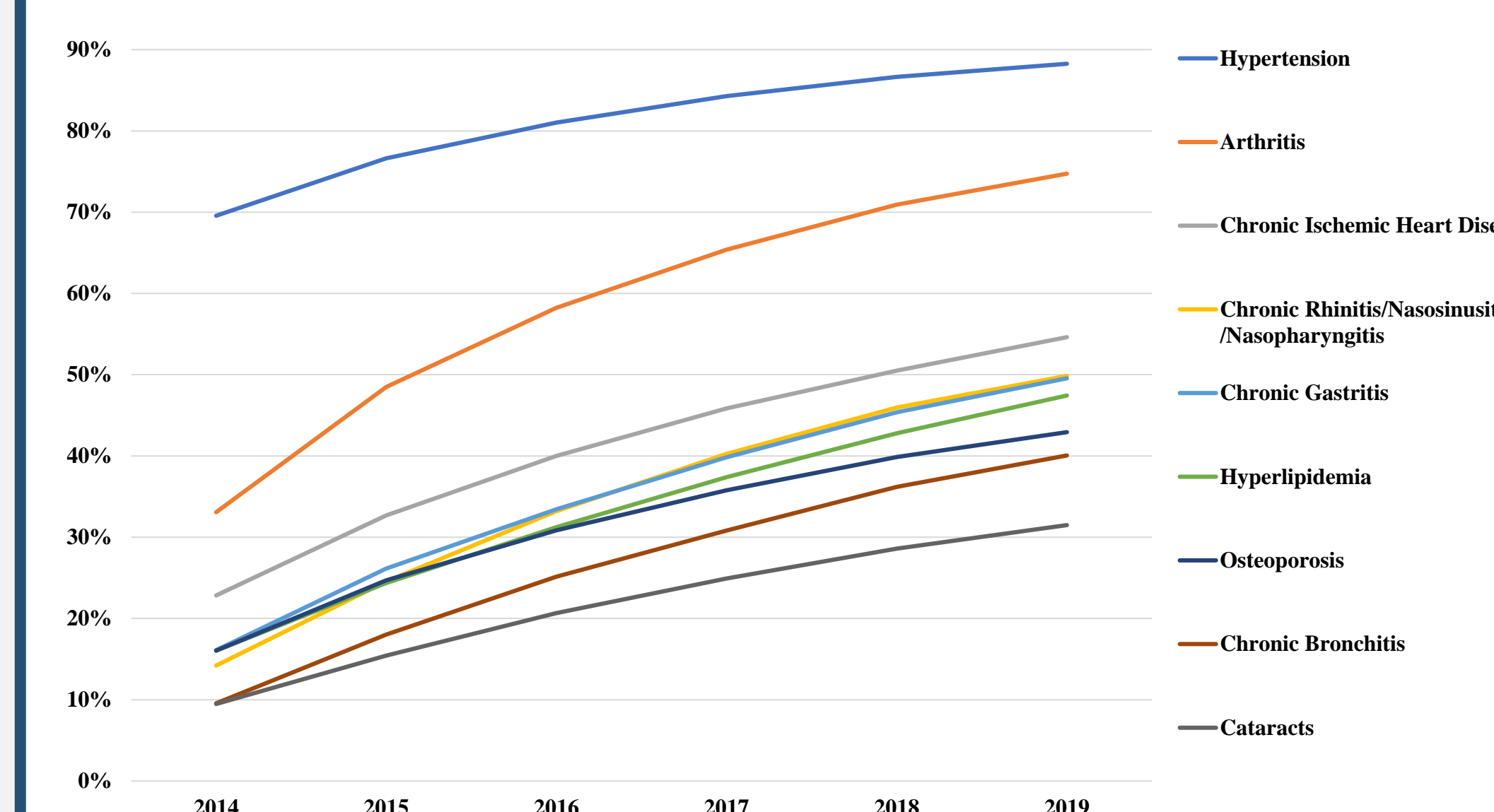
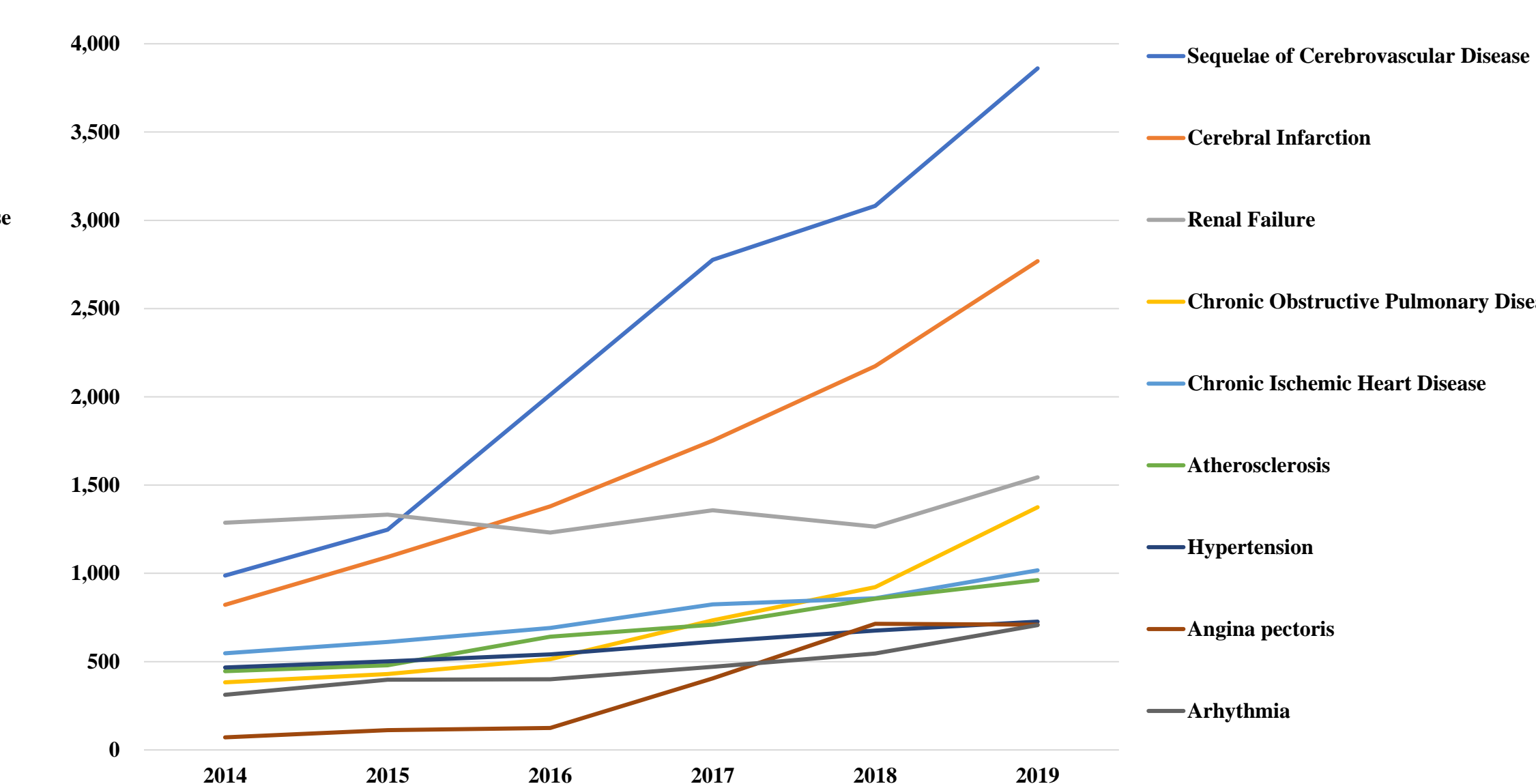


Figure 2 - Economic burden of diabetes multimorbidity



➤ Cluster analysis of multimorbidity in diabetic patients

- The sample population was divided into 21 groups, 19 of which were fixed to a particular multimorbidity.
- The top five cluster groups of multimorbidity among patients with diabetes were arthritis, spondylosis, chronic conjunctivitis, cerebrovascular sequelae, and cataracts (See Table 1).

Table 1 - Disease characteristics of clustered groups based on multimorbidity

Group	N (%)	Feature (Probability of having other multimorbidity)(%)
Diabetes & Arthritis	7395(9.3)	Hypertension (76.5) - Chronic rhinitis/nasopharyngitis/sinusitis (39.9) - Chronic gastritis (36.5) - Osteoporosis (28.6) - Hyperlipidemia (27.1)
Diabetes & Spondylosis	4602(5.8)	Arthritis (89.2) - Hypertension (86.3) - Chronic rhinitis/nasopharyngitis/sinusitis (57.4) - Chronic gastritis (56.2) - Osteoporosis (48.7)
Diabetes & Chronic Conjunctivitis	4159(5.2)	Hypertension (85.5) - Arthritis (84.0) - Chronic rhinitis/rhinopharyngitis/sinusitis (58.6) - Chronic gastritis (51.6) - Chronic ischemic heart disease (46.5)
Diabetes & Cerebrovascular Sequelae	4119(5.2)	Hypertension (96.0) - Cerebral infarction (83.7) - Chronic ischemic heart disease (78.1) - Arthritis (75.5) - Hyperlipidemia (63.4)
Diabetes & Cataract	4111(5.1)	Hypertension (89.2) - Arthritis - (82.7) - Chronic ischemic heart disease (55.4) - Osteoporosis (43.1) - Chronic gastritis (42.2)

Due to table limitations, the feature columns only show the five most likely multimorbidities for the group.

Results

➤ Prevalence of Diabetes Multimorbidity

- Between 2014 and 2019, the number of diabetics with multimorbidity increased from 70,207 (87.9%) to 79,320 (99.3%), and the average number with multimorbidity increased from 2.7 to 7.4.
- Among the diabetic population, the prevalence of nine diseases exceeded 30% in 2019 (See Figure 1).
- The prevalence of the highest multimorbidity in 2019 was hypertension (88.3%), followed by arthritis (74.7%), chronic ischemic heart disease (54.6%), chronic rhinitis/nasosinusitis/nasopharyngitis(49.9%), and Chronic Gastritis (49.6%).

Conclusions

➤ Multimorbidity is a common occurrence among diabetic patients in China

- The most common multimorbidities are hypertension, arthritis, chronic ischemic heart disease, chronic rhinitis/nasosinusitis/nasopharyngitis, and Chronic Gastritis.

➤ More than 30% of healthcare costs for diabetics are caused by multimorbidity

- High-burden multimorbidities involve cerebrovascular disease sequelae, cerebral infarction, renal failure, chronic obstructive pneumonia, chronic ischemic heart disease.

➤ Specific diabetes multimorbidity groups have different high prevalence diseases

- Different multimorbidities are interrelated, identifying diabetes-specific multimorbidity clusters can help to target potential high prevalence diseases for early prevention and intervention.