

Wenxuan Jiang<sup>1</sup>, Pinan Chen<sup>1</sup>, Shitong Xie<sup>1</sup>, Jing Wu<sup>1\*</sup>

<sup>1</sup> School of Pharmaceutical Science and Technology, Tianjin University, Tianjin, China

## INTRODUCTION

- Compared to patients with Osteoporosis (OP), those with Osteoporosis at very high risk of fracture (OPVHRF) face worse treatment conditions and bear heavier economic burden. In the USA, only 16.8% of patients with OPVHRF received anti-osteoporosis treatment.
- However, the epidemiology and disease burden of OPVHRF were still unknown in China. Better understanding of the real-world clinical characteristics and economic burden of OPVHRF is important to improve the disease management in China.

## OBJECTIVES

- To investigate the epidemiology and disease burden among patients with Osteoporosis at very high risk of fracture (OPVHRF) in China.

## METHODS

- Data were obtained from Tianjin Healthcare Big Data Super Platform (2019-2023), which had covered records of patient visits to 40 tertiary hospitals and 30 secondary hospitals in Tianjin, covering about 17 million patients as of 2023.
- Patients aged  $\geq 50$  years with diagnosis of OP (ICD-10 codes M80.x or M81.x) supplemented with Chinese descriptions were identified during the identification period (Jun 30, 2020 to Jun 30, 2021).
  - The identification criteria for OPVHRF were based on the Guidelines for the Diagnosis and Treatment of Primary Osteoporosis in China (2022).

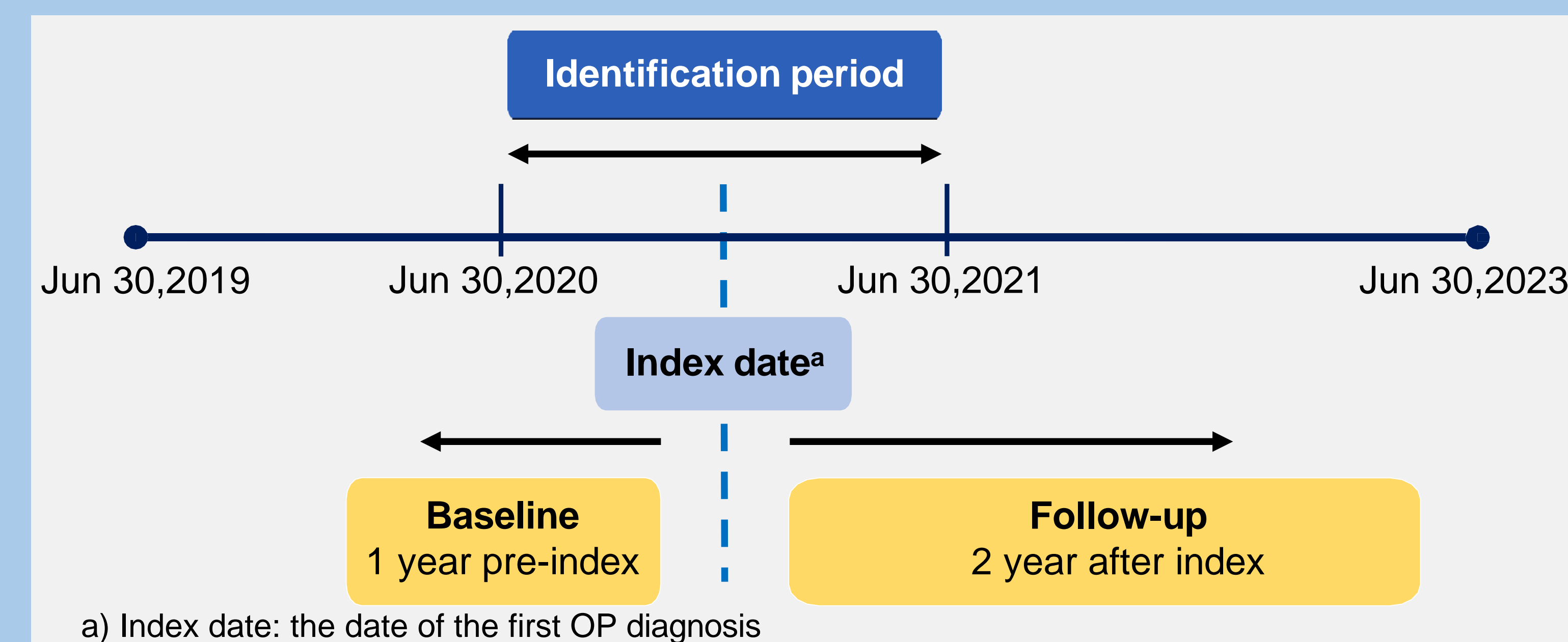


Figure 1. Overview of the study period

- Epidemiological characteristics were described by annual prevalence rate of hospital visits for OPVHRF.
- Patient demographics were recorded on the baseline period, with comorbidities selected based on associations with OP in previous literature and clinical experience.
- All-cause and OP-specific direct medical costs were estimated during the follow-up period.

## RESULTS

### 1. Epidemiological characteristics

- Out of 3,275,927 patients in identification period from database, 71,792 OP patients were identified, among whom 19,984 were diagnosed with OPVHRF, corresponding to annual prevalence rate of hospital visits for OPVHRF of 0.61%.

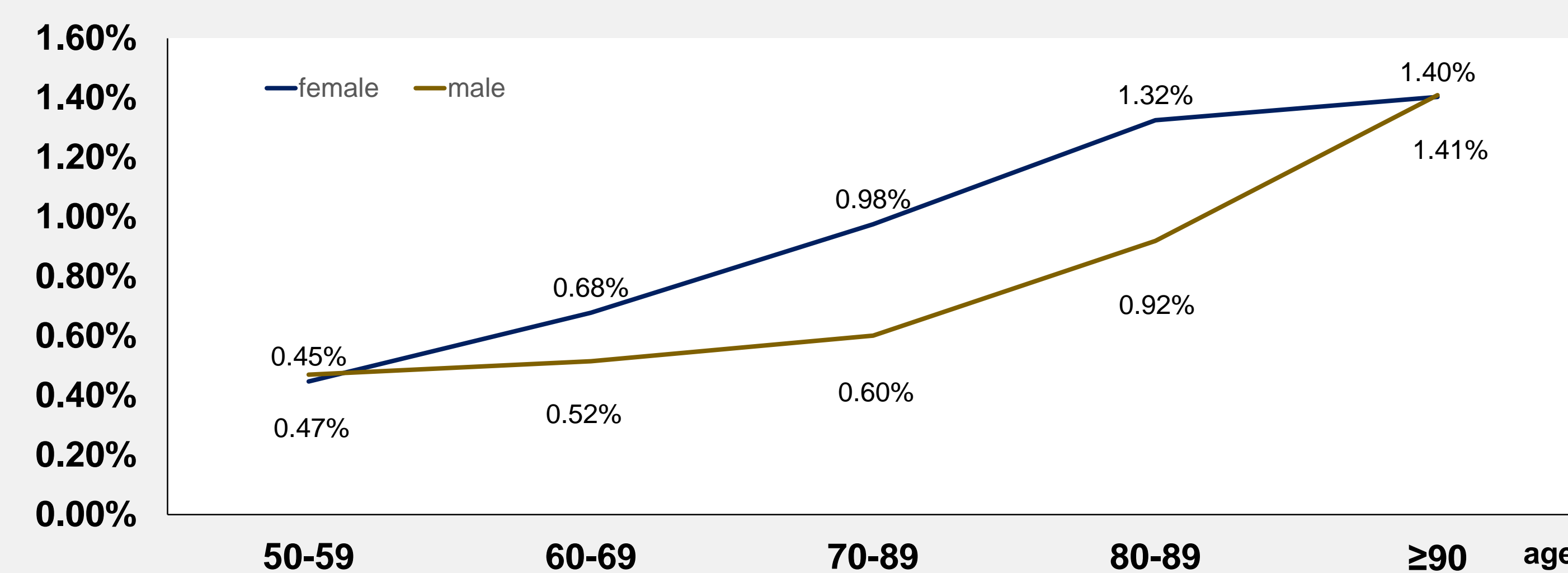


Figure 2. The annual prevalence rate of hospital visits for OPVHRF in identification period

### 2. Demographics and comorbidities

- The proportion of OPVHRF patients among OP patients was 27.84%. The mean (SD) age of OPVHRF patients was 66.0 (10.0) years, and 58.39% were female.
- The mean (SD) CCI of OPVHRF patients was 0.57 (1.02). The cardio- and cerebrovascular diseases were common comorbidities among OPVHRF patients.

Table 1. Associated Comorbidities in OPVHRF

	OPVHRF patients (n=19,984)
<b>Cardio- and cerebrovascular diseases, n (%)</b>	
Hypertension	5699 (28.52%)
Stroke	2079 (10.40%)
Arrhythmia	1444 (7.23%)
Heart failure	1196 (5.98%)
Angina pectoris	899 (4.50%)
Myocardial infarction	180 (0.90%)
<b>Musculoskeletal diseases, n (%)</b>	
Osteoarthritis	1534 (7.68%)
Rheumatoid arthritis	728 (3.64%)
<b>Other systemic illness, n (%)</b>	
Diabetes	2892 (14.47%)
Chronic pulmonary disease	1519 (7.60%)
Chronic renal insufficiency	897 (4.49%)
Anxiety	833 (4.17%)
Thrombophlebitis	628 (3.14%)
Depression	367 (1.84%)
Fall	338 (1.69%)
Parkinson disease	192 (0.96%)
Alzheimer disease	137 (0.69%)
Multiple sclerosis	2 (0.01%)
Central venous catheter-related infection	1 (0.01%)

### 3. Economic burden

- All-cause total direct medical cost of OPVHRF patients in 1<sup>st</sup> year was ¥24089.9 ±55796.9 per patient(Tab 2). OP-specific direct medical cost of OPVHRF was ¥13699.0±38548.7 per patient, and inpatient cost accounted for 84.2% of the total cost(¥11539.4±38466.9).

Table 2. Direct medical costs of OPVHRF patients

Characteristics	1 <sup>st</sup> year		2 <sup>nd</sup> year	
	OP-specific cost	All-cause cost	OP-specific cost	All-cause cost
<b>Costs per patient [ mean ± SD ]</b>				
<b>Total costs</b>	13699.0 ± 38548.7	24089.9 ± 55796.9	1768.0 ± 12571.7	7615.7 ± 34099.2
<b>Inpatient costs</b>	11539.4 ± 38466.9	15807.6 ± 50330.1	842.1 ± 11634.7	2620.6 ± 25916.5
<b>Outpatient costs</b>	2159.5 ± 5556.6	8282.3 ± 23179.4	925.9 ± 4482.7	4995.2 ± 20410.5
<b>Inpatient costs among hospitalized patients</b>				
<b>Per patient</b>	41813.9 ± 64002.9	45915.7 ± 77303.9	31811.2 ± 64312.8	39228.3 ± 92867.0
<b>Per hospitalization</b>	33793.0 ± 45646.7	31999.6 ± 46123.9	23275.4 ± 35911.5	25009.4 ± 40085.1
<b>Outpatient costs among outpatient patients</b>				
<b>Per patient</b>	2898.9 ± 6269.3	9229.5 ± 24289.8	4798.5 ± 9250.7	11032.6 ± 29215.5
<b>Per outpatient visit</b>	663.2 ± 690.2	701.3 ± 913.9	785.5 ± 707.6	750.7 ± 1008.2

- Medical consumable cost was the most important cost component of OP-specific total costs of OPVHRF patients in 1<sup>st</sup> year (35.4%), followed by medication (26.1%) and treatment costs (20.5%) (Fig 3).

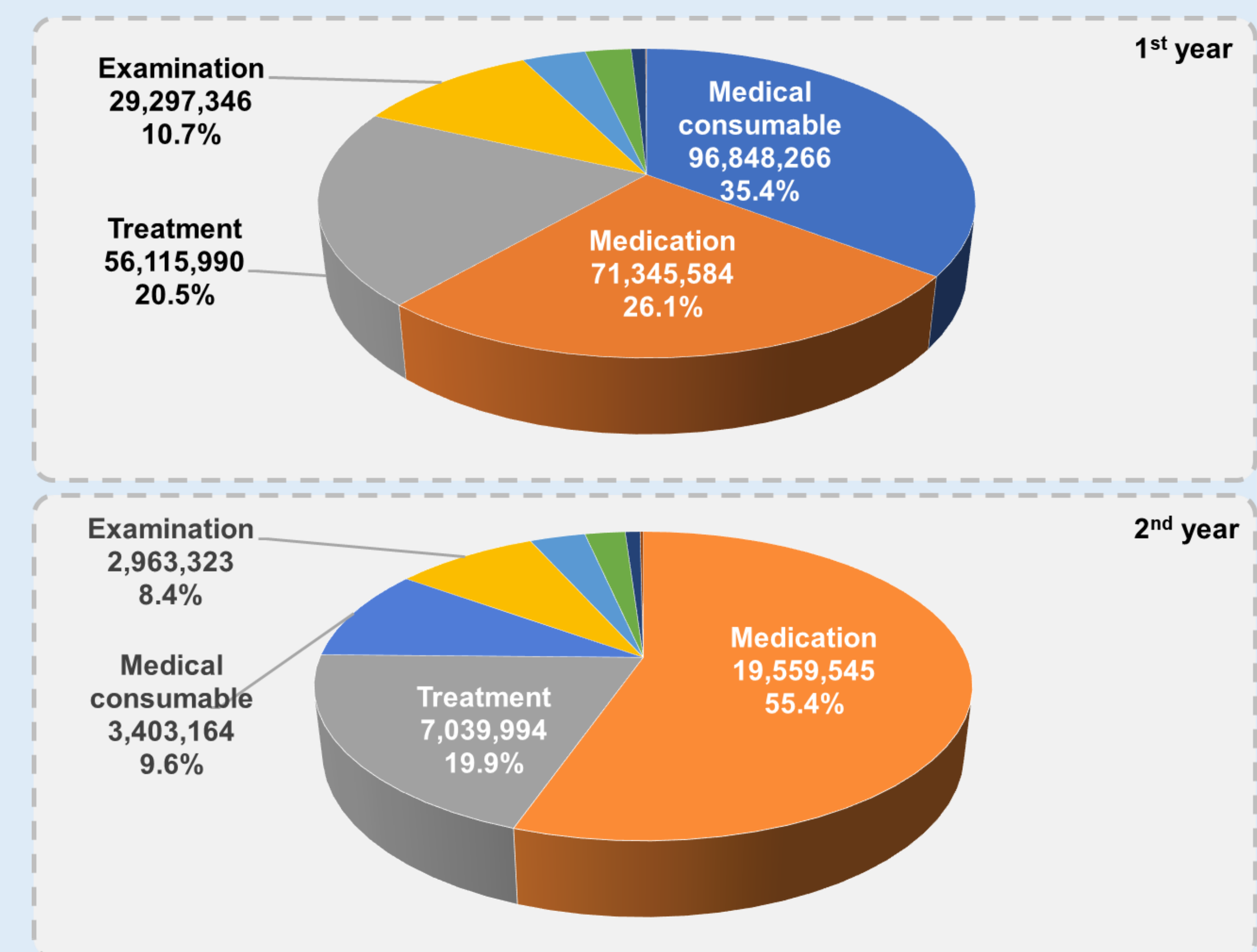


Figure 3. Decomposition of OP-specific direct medical costs

## CONCLUSION

- Almost one third of OP patients were identified as OPVHRF in China, with increased comorbidities and economic burden, which indicates that effective strategies are needed for better long-term management of OPVHRF.

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