

# ECONOMIC BURDEN

#### of Cardiovascular Diseases in Indonesia: Analysis of BPJS Kesehatan National Health Insurance Claims Data 2019-2022

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## **01** INTRODUCTION

Cardiovascular diseases (CVD) impose a significant economic burden on individuals and society in Indonesia, accounting for approximately one-third of all deaths.

### **02** OBJECTIVE

This study aims to describe the economic burden of CVD using claims data from referral health facilities under BPJS Kesehatan across Indonesia.

### **03 METHODS**

This nationwide, population-based cohort study utilized the National Health Insurance System managed by BPJS Kesehatan. The study identified patients of all age groups with an inpatient and/or outpatient diagnosis of CVD, specified by ICD-10 codes, in 2019–2022. The claims data were analyzed descriptively and differentiated by age, gender, region, and type of CVD, including hypertensive heart disease, myocardial infarction, ischaemic heart disease, stroke, and others. Healthcare costs for CVD included direct medical costs for hospitalization, outpatient care, and prescription drugs.

#### RESULTS

A total of 14,889,811 CVD claims from 2019-2022 were included. The highest prevalence was observed in the age group 61-70 years (36%), with 52% being male. The majority of patients were from Java Island (70%). Ischaemic heart disease, hypertensive heart disease, and stroke were the most common diagnoses, accounting for 34%, 33% and 23%, respectively. Total healthcare costs for CVD patients decreased in 2020 to 2021, and increased again in 2022 from IDR 3,630,581,024,866 (US\$ 228,726,605) in 2021 to IDR 4,341,330,277,515 (US\$ 273,503,807) in 2022, with an annual increase of 20%. Hospitalization costs were the highest, averaging IDR 2,879,439,011,216 (US\$ 181,404,658) and representing 6% of patients, with similar cost distribution across patients with mild, moderate, and severe disease severity.



**Figure 1.** Trends in the Percentage of Incidence for Cardiovascular-Related ICD-10 Diagnoses from 2019 to 2022.



Table 1. Characteristics of cardiovascular disease patients in NationalHealth Insurance claims, Indonesia, 2019 to 2022.

Sociodomographic	Number of patients								
Sociodemographic	2019		2020		2021		2022		p-value
ICD-10 Code									
Hypertensive heart disease	1,691,128	34.56	1,361,357	32.36	1,463,044	31.40	1,908,922	33.67	
Angina pectoris	291,328	5.95	199,882	4.75	227,547	4.88	258,381	4.56	
Myocardial infarction	164,947	3.37	170,793	4.06	162,746	3.49	175,196	3.09	
Ischaemic heart disease	1,472,320	30.09	1,421,103	33.78	1,744,750	37.45	1,881,976	33.19	< 0.0001
Atrial fibrillation and flutter	69,432	1.42	50,490	1.20	50,843	1.09	77,307	1.36	< 0.0001
Intracerebral haemorrhage	26,392	0.54	36,541	0.87	54,018	1.16	61,150	1.08	
Stroke, not specified	1,171,847	23.95	962,156	22.87	948,396	20.35	1,302,758	22.98	
Aortic aneurysm and dissection	5,235	0.11	4,343	0.10	8,122	0.17	4,456	0.08	
Age									
1 to 10	2,303	0.05	4,069	0.10	1,738	0.04	3,300	0.06	
11 to 20	2,977	0.06	2,022	0.05	16,010	0.34	11,513	0.20	
21 to 30	15,271	0.31	19,241	0.46	27,239	0.58	31,350	0.55	
31 to 40	104,640	2.14	87,640	2.08	127,206	2.73	139,749	2.46	
41 to 50	420,349	8.59	386,588	9.19	494,564	10.61	761,540	13.43	
51 to 60	1,166,821	23.85	1,152,402	27.39	1,396,344	29.97	1,724,018	30.41	< 0.0001
61 to 70	1,755,918	35.89	1,525,945	36.27	1,656,486	35.55	1,950,434	34.40	
71 to 80	1,048,634	21.43	814,592	19.36	772,819	16.59	846,870	14.94	
81 to 90	355,873	7.27	200,614	4.77	161,619	3.47	189,780	3.35	
91 to 100	19,482	0.40	13,434	0.32	5,441	0.12	11,591	0.20	
101 to 110	360	0.01	115	0.00	0	0.00	0	0.00	
Gender									, 
Male	2,458,450	50.25	2,153,237	51.19	2,479,080	53.21	2,997,734	52.87	0.4050
Female	2,434,178	49.75	2,053,427	48.81	2,180,386	46.79	2,672,412	47.13	0.1250
Region									
Java	3,530,414	72.16	2,959,653	70.36	3,183,695	68.33	3,954,377	69.74	
Sumatera	739,972	15.12	689,383	16.39	825,667	17.72	951,619	16.78	0.5795
Kalimantan	177,137	3.62	162,025	3.85	183,394	3.94	207,267	3.66	
Sulawesi	217,797	4.45	181,976	4.33	232,094	4.98	252,515	4.45	

**Figure 2.** Trends in the Percentage of Incidence for Cardiovascular-Related age from 2019 to 2022.

#### CONCLUSION

This nationwide real-world study found that CVD has a substantial economic impact, with total healthcare costs rising by 20% from 2021 to 2022. These findings highlight the urgent need for targeted interventions to manage CVD and reduce its economic impact in Indonesia.

Bali and Nusa Tenggara 197,776 4.04 187,412 262,345 4.63 4.46 200,255 4.30 29,532 Maluku and Papua 0.60 26,214 34,361 0.74 42,023 0.74 0.62

**Table 2.** Economic burden of cardiovascular diseases in National Health Insurance claims, Indonesia, 2019 to 2022.

Diagnose					
	2019	2020	2021	2022	<i>p-</i> value
Hypertensive heart disease	32,134,816	23,439,503	26,350,272	33,352,546	0.7617
Angina pectoris	27,853,534	20,305,525	26,517,950	26,471,620	0.0027
Myocardial infarction	37,237,326	31,491,504	36,762,515	45,658,224	0.0001
Ischaemic heart disease	83,549,172	78,108,393	85,319,514	84,987,480	0.0001
Atrial fibrillation and flutter	6,022,259	3,353,663	2,666,973	6,393,336	0.1943
Intracerebral haemorrhage	5,207,750	9,537,516	8,379,256	13,106,957	0.0002
Stroke, not specified	65,107,009	46,920,805	42,163,623	63,442,190	0.0243
Aortic aneurysm and dissection	338,512	278,522	566,501	91,454	0.4225
Total	257,450,379	213,435,432	228,726,605	273,503,807	

1USD = IDR 15.845,30 6 Nov 2024, 15.04 UTC