



ABSTRAK

Pola Fragmentasi Klaim Prosedur PCI dalam Sistem Pembayaran INA-CBG

Latar Belakang: Fragmentasi klaim dapat terjadi ketika beberapa klaim diajukan untuk rangkaian pelayanan yang sebenarnya masih berada dalam satu episode perawatan. Pada prosedur berbiaya tinggi seperti *Percutaneous Coronary Intervention* (PCI), kondisi ini berpotensi meningkatkan akumulasi biaya episode serta menimbulkan variasi administratif dalam sistem pembayaran INA-CBG pada Program Jaminan Kesehatan Nasional (JKN). Penelitian ini bertujuan menganalisis pola fragmentasi klaim PCI dan mengidentifikasi variasi administratif antar episode pelayanan.

Metode: Penelitian ini menggunakan desain deskriptif analitik dengan data sekunder klaim PCI periode 2021–2024. Sebanyak 1.028 klaim PCI yang berasal dari 346 pasien dan 35 rumah sakit dikelompokkan menjadi 346 episode analitik sebagai unit analisis. Indikator fragmentasi dianalisis secara deskriptif, kemudian variasi administratif antar episode diidentifikasi menggunakan algoritma *Local Outlier Factor* (LOF) dengan parameter $k = 20$.

Hasil: Sebagian besar pasien memiliki tiga klaim PCI dalam satu episode (93,9%) dengan interval antar klaim 10–90 hari, dan 98,55% episode memiliki kode prosedur PCI yang identik. Rata-rata biaya klaim PCI per SEP berkisar Rp37,3–Rp39,7 juta, sedangkan rata-rata biaya pada tingkat episode mencapai Rp111–Rp119 juta dengan nilai maksimum lebih dari Rp250 juta. Hasil analisis LOF menunjukkan nilai rata-rata 1,257 (median 1,065) dengan rentang 0,954–10,526. Sebagian besar episode (90,46%) memiliki karakteristik administratif yang relatif serupa, sedangkan 9,54% episode teridentifikasi memiliki penyimpangan administratif relatif lebih tinggi.

Simpulan: Pola klaim PCI dalam dataset penelitian menunjukkan keberadaan beberapa klaim dalam satu episode pelayanan dengan interval waktu yang relatif berdekatan serta akumulasi biaya episode yang tinggi. Pendekatan analisis berbasis episode analitik dan deteksi anomali menggunakan LOF mampu menggambarkan variasi administratif klaim PCI serta mengidentifikasi episode dengan indikasi anomali administratif dalam sistem pembayaran INA-CBG.

Kata Kunci: fragmentasi klaim, Percutaneous Coronary Intervention, Local Outlier Factor, INA-CBG, deteksi anomali klaim, Jaminan Kesehatan Nasional.



ABSTRACT

Patterns of Percutaneous Coronary Intervention (PCI) Claim Fragmentation in the Indonesian Case-Based Groups (INA-CBG) Payment System

Background: Claim fragmentation may occur when multiple claims are submitted for a series of healthcare services that actually belong to a single episode of care. In high-cost procedures such as Percutaneous Coronary Intervention (PCI), this situation may increase the accumulation of episode costs and create administrative variations within the INA-CBG payment system under Indonesia's National Health Insurance (JKN) program. This study aimed to analyze the pattern of PCI claim fragmentation and identify administrative variations across episodes of care.

Methods: This study employed a descriptive analytic design using secondary PCI claim data from 2021–2024. A total of 1,028 PCI claims from 346 patients treated in 35 hospitals were grouped into 346 analytic episodes as the main unit of analysis. Fragmentation indicators were analyzed descriptively, and administrative variations across episodes were identified using the Local Outlier Factor (LOF) algorithm with parameter $k = 20$.

Results: Most patients had three PCI claims within a single episode (93.9%), with claim intervals ranging from 10 to 90 days, and 98.55% of episodes involved identical PCI procedure codes. The average PCI claim cost per SEP ranged from IDR 37.3–39.7 million, while the average episode-level cost ranged from IDR 111–119 million, with a maximum exceeding IDR 250 million. LOF analysis produced a mean score of 1.257 (median 1.065) with a range of 0.954–10.526. Most episodes (90.46%) showed relatively similar administrative characteristics, whereas 9.54% of episodes demonstrated relatively higher administrative deviations.

Conclusion: PCI claims in the dataset tend to appear as multiple claims within a single care episode with relatively short intervals and high episode-level cost accumulation. An episode-based analytical approach combined with LOF anomaly detection is able to describe administrative variations in PCI claims and identify episodes with indications of administrative anomalies in the INA-CBG payment system.

Keywords: claim fragmentation, percutaneous coronary intervention, local outlier factor, INA-CBG, anomaly detection, national health insurance.