

Identifikasi dan Perbandingan Wilayah Hotspot-Coldspot Infeksi Saluran Pernapasan Akut (ISPA) pada Balita di Pulau Jawa: Analisis Spasial dan Multilevel

Anasi, Raras

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Abstrak

ISPA (Infeksi Saluran Pernapasan Akut) merupakan salah satu penyebab utama morbiditas balita di Indonesia, dengan prevalensi sebesar 36,9% pada tahun 2024 dan menunjukkan peningkatan dibandingkan tahun sebelumnya. Berdasarkan data Kementerian Kesehatan, prevalensi ISPA pada balita tertinggi terdapat di Pulau Jawa (38,4%-49,1%). Penelitian ini bertujuan mengidentifikasi wilayah hotspot dan coldspot ISPA di Pulau Jawa serta menganalisis determinannya menggunakan data SSGI 2024. Hotspot didefinisikan sebagai wilayah dengan kejadian tinggi yang dikelilingi wilayah berkejadian tinggi, sedangkan coldspot merupakan kondisi sebaliknya. Analisis pola spasial dilakukan menggunakan Moran's I dan Getis-Ord Gi*, sementara hubungan antarvariabel dianalisis dengan regresi logistik multilevel tiga level (individu, rumah tangga, dan kabupaten/kota). Hasil analisis, diketahui adanya autokorelasi spasial (Moran's I=0,220; p=0,001) dengan 15 kabupaten/kota sebagai hotspot yang sebagian besar berada di Jawa Barat dan Banten, serta 7 kabupaten/kota sebagai coldspot yang berada di Jawa Timur bagian timur dan sebagian Jawa Tengah. Wilayah hotspot meningkatkan risiko ISPA (OR=1,725; 95%CI:1,05-2,52) dan coldspot bersifat protektif (OR=0,58; 95%CI: 0,33-1,04). Faktor risiko signifikan lainnya meliputi jenis kelamin laki-laki (OR=1,05; 95%CI: 1,00-1,10), usia (OR=1,03; 95%CI: 1,00-1,04), wasting (OR=1,15; 95%CI: 1,03-1,29), underweight (OR=1,31; 95%CI: 1,19-1,43), overweight (OR=0,75; 95%CI: 0,63-0,89), pendidikan ibu rendah (OR=1,11; 95%CI: 1,05-1,18), ibu bekerja (OR=0,94; 95%CI: 0,89-0,99), sosial ekonomi kuintil terbawah (OR=1,16; 95%CI: 1,04-1,28), kepadatan hunian tidak memenuhi syarat (OR = 1,17; 95%CI: 1,07-1,29), dan kepadatan penduduk (OR = 1,04; 95%CI: 1,00-1,08). Nilai ICC rumah tangga 0,589 dan kabupaten/kota 0,064 pada full model mengindikasikan adanya variasi antar kluster dan membenarkan penggunaan model multilevel. Distribusi ISPA di Pulau Jawa menunjukkan pola spasial yang bermakna dengan perbedaan risiko yang signifikan antara wilayah hotspot dan coldspot berdasarkan faktor individu, keluarga, dan wilayah. Temuan ini menegaskan perlunya intervensi kesehatan berbasis wilayah dengan prioritas pada kabupaten/kota hotspot.

Acute Respiratory Infections (ARI) represent one of the leading causes of morbidity among children under five in Indonesia, with a prevalence of 36.9% in 2024, representing an increase from the preceding year. Based on data from the Ministry of Health, the highest prevalence of ARI among children under five is found in Java Island (38.4%–49.1%). This study aimed to identify hotspot and coldspot areas of ARI in Java Island and to analyze their determinants using data from the 2024 SSGI. Hotspots are defined as high-incidence areas surrounded by neighboring areas of similarly elevated incidence, whereas coldspots represent the opposite condition. Spatial pattern analysis was conducted using Moran's I and Getis-Ord Gi*, while associations between variables were examined using three-level multilevel logistic regression at the individual, household, and district/city levels. The results revealed the presence of spatial autocorrelation (Moran's I = 0.220; p = 0.001), with 15 districts and cities identified as hotspots, predominantly located in West Java and Banten, and 7 districts and cities identified as coldspots, situated in

eastern East Java and parts of Central Java. Hotspot classification was associated with a significantly increased risk of ARI (OR = 1.725; 95% CI: 1.05–2.52), while coldspot classification was found to be protective (OR = 0.58; 95% CI: 0.33–1.04). Other significant risk factors included male sex (OR = 1.05; 95% CI: 1.00–1.10), age (OR = 1.03; 95% CI: 1.00–1.04), wasting (OR = 1.15; 95% CI: 1.03–1.29), underweight (OR = 1.31; 95% CI: 1.19–1.43), overweight (OR = 0.75; 95% CI: 0.63–0.89), low maternal education (OR = 1.11; 95% CI: 1.05–1.18), maternal employment (OR = 0.94; 95% CI: 0.89–0.99), lowest socioeconomic quintile (OR = 1.16; 95% CI: 1.04–1.28), household overcrowding not meeting standard requirements (OR = 1.17; 95% CI: 1.07–1.29), and population density (OR = 1.04; 95% CI: 1.00–1.08). The intraclass correlation coefficients (ICC) at the household level (0.589) and district/city level (0.064) in the full model indicated the presence of between-cluster variation, thereby justifying the use of a multilevel modeling approach. The distribution of ARI in Java Island demonstrated a significant spatial pattern, with meaningful risk differences between hotspot and coldspot areas attributable to individual, household, and regional factors. These findings underscore the need for area-based health interventions, with priority given to districts and cities identified as hotspots.