

## ABSTRAK

### INDEKS HEMATOLOGI SEBAGAI PREDIKTOR SEPSIS PADA ANAK

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**Latar belakang:** Sepsis menjadi penyebab utama morbiditas dan mortalitas anak di dunia. Deteksi dan diagnosis dini sepsis pada anak sulit ditegakkan mengingat variasi klinis anak yang luas dan keterbatasan ketersediaan pemeriksaan laboratorium di fasilitas pelayanan kesehatan. Indeks hematologi sebagai pemeriksaan laboratorium yang murah dan tersedia secara luas, berpotensi menjadi biomarker untuk memprediksi sepsis pada anak.

**Tujuan:** Menganalisis indeks hematologi untuk memprediksi kejadian sepsis pada anak

**Metode:** Penelitian dengan studi retrospektif desain cross sectional di ruang perawatan dan intensif anak RS dr. Kariadi Semarang selama bulan Januari 2024–Juni 2025. Data diambil dari rekam medis, meliputi karakteristik dasar subjek, profil klinis, darah rutin, indeks hematologi yang meliputi *red cell distribution width* (RDW), *absolute neutrophil count* (ANC), *absolute lymphocyte count* (ALC), *neutrophil-to-lymphocyte ratio* (NLR), *mean platelet volume* (MPV), *platelet-to-lymphocyte ratio* (PLR). Diagnosis sepsis ditegakkan berdasarkan skor Phoenix Sepsis Score ( $\geq 2$ ). Analisis statistik menggunakan uji Mann Whitney, Chi Square, dan analisis regresi logistik dengan program SPSS.

**Hasil:** Penelitian ini melibatkan 312 subjek. Terdapat 118 subjek (37,8%) yang mengalami sepsis. Sebanyak 67 pasien sepsis (56,8%) meninggal. Nilai median *range* MPV adalah 10 (2.0 - 14.2) dan PLR adalah 95 (0 - 5000). Analisis multivariat menunjukkan MPV rendah (OR 0,723; CI 0,59–0,89;  $p=0,002$ ), dan PLR tinggi (OR 1,789; CI 1,11–2,87;  $p=0,016$ ) bermakna sebagai prediktor sepsis. RDW, NLR, ANC, ALC tidak berpengaruh signifikan dengan sepsis.

**Kesimpulan:** Indeks hematologi MPV dan PLR berpengaruh signifikan sebagai prediktor sepsis pada anak.

**Kata Kunci:** Sepsis, Indeks hematologi, Anak

## ABSTRACT

### HEMATOLOGICAL INDICES AS PREDICTORS OF SEPSIS IN CHILDREN

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**Background:** Sepsis remains a leading cause of morbidity and mortality among children globally. Early detection and diagnosis of pediatric sepsis remain challenging due to clinical variability in children and limitations of laboratory facilities in health care settings. Hematological indices, as inexpensive and widely available laboratory tests, have the potential to serve as biomarkers to predict sepsis in children.

**Objective:** To analyze hematological indices as predictors of sepsis in pediatric patients.

**Methods:** Retrospective cross-sectional study was conducted in the pediatric wards and intensive care units of Dr. Kariadi Hospital, Semarang, from January 2024 to June 2025. Data were extracted from medical records included basic patient characteristics, clinical profiles, routine blood examinations, and hematological indices: red cell distribution width (RDW), absolute neutrophil count (ANC), absolute lymphocyte count (ALC), neutrophil-to-lymphocyte ratio (NLR), mean platelet volume (MPV), and platelet-to-lymphocyte ratio (PLR). Sepsis was diagnosed using the Phoenix Sepsis Score ( $\geq 2$ ). Statistical analysis utilized the Mann-Whitney test, Chi-square, and logistic regression.

**Results:** A total of 312 subjects were included, of whom 118 (37.8%) were diagnosed with sepsis. Among the sepsis group, 67 patients (56.8%) died. The median (range) values for MPV and PLR were 10 (2.0–14.2) and 95 (0–5000), respectively. Multivariate analysis showed significant associations for low MPV (OR 0.723; CI 0.59–0.89;  $p=0.002$ ) and high PLR (OR 1.789; CI 1.11–2.87;  $p=0.016$ ) as predictors of sepsis. RDW, NLR, ANC, and ALC were not significant

**Conclusion:** MPV and PLR are significant hematological predictors of sepsis in children.

**Keywords:** Sepsis, Hematological indices, Children