

THE RELATIONSHIP BETWEEN SEVERE COVID PREDICTION ESTIMATE (SCOPE) SCORE AND DISEASE SEVERITY IN SEVERE AND CRITICAL COVID-19 PATIENTS

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ABSTRACT

Background: The Severe COVID Prediction Estimate (SCOPE) score, derived from D-dimer, C-reactive protein (CRP), ferritin and IL-6, predicts the severity of COVID-19. A higher SCOPE score indicates an increased risk of critical disease. A critical COVID-19 status indicates a severe level of the COVID-19 disease where patients are in need of mechanical ventilator support or vasopressor drugs support.

Objective: This study aims to evaluate the relationship between Severe COVID Prediction Estimate (SCOPE) score and disease severity in severe and critical COVID-19 patients.

Method: A research population of severe and critical adult COVID-19 patients in RSUP dr. Sardjito in 2021 will be included in this retrospective cross-sectional study according to their SCOPE score and disease severity, with Severe COVID Prediction Estimate (SCOPE) score as the independent variable and COVID-19 disease severity as the dependent variable.

Results: This study analyzed 274 medical records of severe and critical COVID-19 patients at RSUP dr. Sardjito. The findings showed a significant association between the Severe COVID Prediction Estimate (SCOPE) Score and disease severity. Patients with a SCOPE Score ≥ 11 were more frequently classified as critical (RR = 1.174, 95% CI: 1.049 – 1.314, $p < 0.010$). The ROC curve analysis determined a cut-off point of 11, with an area under the curve (AUC) of 0.590 (95% CI: 0.529 – 0.649, $p = 0.020$). In the multivariate analysis, SCOPE Score remained an independent predictor of disease severity after adjusting for gender and obesity (aRR = 2.189, 95% CI: 1.038 –

4.425, $p = 0.029$). Other variables, including age, hypertension, and solid cancer, showed no significant association with disease severity.

Conclusion: This study confirms that there is a relationship between Severe COVID Prediction Estimate (SCOPE) Score and COVID-19 disease severity in severe and critical COVID-19 patients. A higher SCOPE Score (≥ 11) is linked to an increased risk of critical disease severity. These findings suggest that the SCOPE Score may help in early risk assessment and clinical decision-making for COVID-19 patients

Keywords: Severe COVID-19, Critical COVID-19, Disease severity, SCOPE score, Retrospective cross-sectional study

Latar Belakang: Severe COVID Prediction Estimate (SCOPE) score, yang dihitung dari D-dimer, C-reactive protein (CRP), ferritin, dan IL-6, digunakan untuk memprediksi derajat keparahan COVID-19. Semakin tinggi skor SCOPE, semakin besar risiko pasien mengalami kondisi kritis. Status COVID-19 kritis mengacu pada kondisi penyakit yang parah, di mana pasien membutuhkan dukungan ventilator mekanik atau obat vasopresor.

Tujuan: Penelitian ini bertujuan untuk mengevaluasi hubungan antara Severe COVID Prediction Estimate (SCOPE) score dengan derajat keparahan penyakit pada pasien COVID-19 berat dan kritis.

Metode: Penelitian ini merupakan studi retrospektif cross-sectional yang melibatkan populasi pasien COVID-19 berat dan kritis di RSUP dr. Sardjito pada tahun 2021. Data dianalisis berdasarkan SCOPE Score sebagai variabel independen dan derajat keparahan COVID-19 sebagai variabel dependen.

Hasil: Penelitian ini menganalisis 274 rekam medis pasien COVID-19 berat dan kritis di RSUP dr. Sardjito. Hasil penelitian menunjukkan adanya hubungan signifikan antara SCOPE Score dan derajat keparahan penyakit. Pasien dengan SCOPE Score ≥ 11 lebih sering diklasifikasikan sebagai kasus kritis (RR = 1.174, 95% CI: 1.049 – 1.314, $p < 0.010$). Analisis kurva ROC menentukan cut-off 11, dengan AUC 0.590 (95% CI: 0.529 – 0.649, $p = 0.020$). Pada analisis multivariat, SCOPE Score tetap memiliki hubungan signifikan dengan derajat keparahan penyakit setelah dikontrol terhadap jenis kelamin dan obesitas (aRR = 2.189, 95% CI: 1.038 – 4.425, $p = 0.029$). Variabel lain, seperti usia, hipertensi, dan kanker solid, tidak menunjukkan hubungan signifikan dengan derajat keparahan COVID-19.

Kesimpulan: Penelitian ini mengonfirmasi adanya hubungan antara Severe COVID Prediction Estimate (SCOPE) Score dan derajat keparahan COVID-19 pada pasien COVID-19 berat dan kritis. SCOPE Score yang lebih tinggi (≥ 11) berhubungan dengan peningkatan risiko penyakit kritis. Temuan ini menunjukkan bahwa SCOPE Score dapat digunakan sebagai alat untuk menilai risiko awal dan mendukung pengambilan keputusan klinis pada pasien COVID-19.

Kata kunci: COVID-19 berat, COVID-19 kritis, derajat keparahan, SCOPE Score, retrospektif cross-sectional.