

# PERBANDINGAN ANTARA CHARLSON COMORBIDITY INDEX (CCI) DAN KLASIFIKASI STATUS FISIK MENURUT AMERICAN SOCIETY OF ANESTHESIOLOGIST (ASA) DALAM MEMPREDIKSI MORTALITAS PADA PASIEN GERIATRI YANG MENJALANI ANESTESI DI RSUP DR SARDJITO YOGYAKARTA

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**Latar Belakang:** Pasien geriatri cenderung memiliki komorbiditas lebih banyak disertai dengan penurunan fungsi fisiologis dan kognitif yang berdampak pada luaran perioperatif. Gabungan antara penurunan fungsi fisiologis terutama perubahan pada farmakodinamik dan farmakokinetik obat-obatan, menyebabkan pemberian obat anestesi mengalami beberapa masalah. Charlson Comorbidity Index (CCI) telah digunakan untuk memprediksi mortalitas berdasarkan penilaian komorbiditas. American Society of Anaesthesiologists (ASA) menyusun klasifikasi status fisiologis untuk memperkirakan status kesehatan pasien berdasarkan penilaian ahli anestesi. Peningkatan skor CCI dan ASA diketahui berbanding lurus dengan peningkatan mortalitas pada pasien geriatri yang menjalani operasi. Oleh karena itu, perbandingan kekuatan prediksi skor CCI dan skor ASA terhadap mortalitas menarik mengingat perbedaan aksesibilitas dan komponen kedua skor.

**Tujuan:** Membandingkan *charlson comorbidity index (CCI)* dan klasifikasi status fisik menurut *American Society of Anesthesiologists (ASA)* dalam memprediksi mortalitas pada pasien geriatri yang menjalani anestesi di RSUP Dr. Sardjito Yogyakarta.

**Metode Penelitian:** Penelitian observasional retrospektif dilakukan pada semua pasien geriatri yang menjalani tindakan anestesi di kamar operasi RSUP Dr Sardjito Yogyakarta pada periode Februari-April 2021. Uji normalitas dilakukan menggunakan Kolmogorov-Smirnov. Analisis bivariat dilakukan uji *Chi Square*. Nilai  $p < 0,05$  dianggap signifikan secara statistik. Validitas prediktif skor CCI dan ASA, serta titik potong optimal skor CCI dievaluasi menggunakan analisis regresi logistik multivariat berdasarkan uji diskriminasi dengan melihat *Area Under Curve (AUC)* dan uji kalibrasi *Hosmer Lemeshow*.

**Hasil:** Terdapat hubungan signifikan antara skor CCI dengan mortalitas (OR 4,589; CI 95% 1,257-16,747;  $p=0,021$ ), usia dengan mortalitas (OR 3,181; CI 95% 1,081-9,366;  $p=0,036$ ). Sementara itu, tidak ditemukan hubungan signifikan antara ASA dengan mortalitas pada pasien geriatri yang menjalani anestesi di RSUP Dr. Sardjito Yogyakarta. Kurva ROC menunjukkan titik potong optimal skor CCI sebesar 2,5 dengan sensitivitas 26,7% dan spesifisitas 90,6% (AUC 57,6%,  $p=0,321$ , 95% CI 0,409-0,744).

**Kesimpulan:** Terdapat hubungan signifikan antara peningkatan skor CCI dengan mortalitas pasien geriatri. Sementara itu, tidak ditemukan adanya hubungan signifikan antara ASA dengan mortalitas pada pasien geriatri yang menjalani tindakan anestesi di RSUP Dr. Sardjito Yogyakarta.

**Kata Kunci:** Geriatri, Anestesi, *Charlson comorbidity index (CCI)*, *American Society of Anaesthesiologists (ASA)*.

## COMPARISON BETWEEN CHARLSON COMORBIDITY INDEX (CCI) AND THE AMERICAN SOCIETY OF ANESTHESIOLOGISTS PHYSICAL STATUS CLASSIFICATION (ASA) IN PREDICTING MORTALITY IN GERIATRIC PATIENTS UNDERGOING ANESTHESIA AT DR SARDJITO HOSPITAL YOGYAKARTA

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**Background:** Geriatric patients tend to have more comorbidities accompanied by a decline in physiological and cognitive function, which impacts perioperative outcomes. The combination of physiological dysfunction, especially changes in pharmacodynamics and pharmacokinetics of drugs, leads to several challenges in administering anesthesia. The Charlson Comorbidity Index (CCI) has been used to predict mortality based on comorbidity assessment. The American Society of Anesthesiologists (ASA) categorizes physiological status to estimate patient health based on anesthesia expert assessment. Increased CCI and ASA scores are known to have significant correlation to increased mortality in geriatric patients undergoing surgery. Therefore, comparing the predictive strength of CCI and ASA scores for mortality is intriguing given the differences in accessibility and components of both scores.

**Objective:** To compare the Charlson Comorbidity Index (CCI) and the American Society of Anesthesiologists (ASA) Physical Status Classification in predicting mortality in geriatric patients undergoing anesthesia at Dr. Sardjito Hospital, Yogyakarta.

**Methods:** A retrospective observational study was conducted on all geriatric patients undergoing anesthesia procedures in the operating room of Dr. Sardjito Hospital, Yogyakarta, during the period of February-April 2021. Normality tests were performed using Kolmogorov-Smirnov. Bivariate analysis was conducted using the Chi-square test. A p-value of  $<0.05$  was considered statistically significant. The predictive validity of CCI and ASA scores, as well as the optimal cutoff point for CCI scores, were evaluated using multivariate logistic regression analysis based on discrimination testing by observing the Area Under Curve (AUC) and the Hosmer-Lemeshow calibration test.

**Results:** There was a significant association between CCI scores and mortality (OR 4.589; 95% CI 1.257-16.747;  $p=0.021$ ), and age and mortality (OR 3.181; 95% CI 1.081-9.366;  $p=0.036$ ). Meanwhile, no significant association was found between ASA and mortality in geriatric patients undergoing anesthesia at Dr. Sardjito Hospital, Yogyakarta. The ROC curve showed an optimal cutoff point for CCI scores of 2.5 with a sensitivity of 26.7% and specificity of 90.6% (AUC 57.6%,  $p=0.321$ , 95% CI 0.409-0.744).

**Conclusion:** There is a significant association between increased CCI scores and mortality in geriatric patients. Meanwhile, no significant association was found between ASA and mortality in geriatric patients undergoing anesthesia at Dr. Sardjito Hospital, Yogyakarta.

**Keywords:** Geriatrics, Anesthesia, Charlson Comorbidity Index (CCI), American Society of Anesthesiologists (ASA).