

## SKOR PREDIKTOR GANGGUAN KOGNITIF PASCASTROKE ISKEMIK AKUT

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### INTISARI

**Latar belakang:** Angka kejadian pasien stroke iskemik dan gangguan kognitif yang ditimbulkan akibat stroke iskemik saat ini semakin meningkat. Selain itu, gangguan kognitif pascastroke iskemik seringkali terlambat diketahui dan telah berkembang menjadi *post-stroke dementia* (PSD). Penelitian yang mengembangkan sistem skor dari faktor prediktor terhadap gangguan kognitif pascastroke iskemik akut masih sedikit dilaporkan di Indonesia.

**Tujuan:** Mengembangkan sistem skor dari faktor prediktor terhadap gangguan kognitif pada pasien pascastroke iskemik akut.

**Metode:** Pasien berusia >18 tahun yang didiagnosis stroke iskemik akut dan telah menjalani pemeriksaan *Mini-Mental State Examination* (MMSE) dan *Clock Drawing Test* (CDT) pada hari ke-30 di RS Bethesda Yogyakarta diikutkan dalam penelitian. Desain penelitian kohort retrospektif dan sampel diperoleh dari stroke register dan rekam medis. Pasien yang memiliki riwayat gangguan kognitif sebelumnya dan data rekam medis tidak lengkap dieksklusi. Hasil MMSE dan CDT pada hari ke-30 adalah luaran pada penelitian ini. Untuk mengetahui hubungan antara variabel bebas dengan variabel tergantung dianalisis menggunakan metode *Chi-Square* dilanjutkan dengan analisis multivariat regresi logistik *Hosmer and Lemeshow* dengan metode *backward Likelihood-Ratio* (LR) dan menilai *Area under the Curve* (AUC) model akhir. Kemudian model akhir ditransformasikan ke dalam sistem skor untuk menentukan nilai prediksi probabilitas *Post-Stroke Cognitive Impairment* (PSCI), titik potong optimal, nilai sensitivitas dan spesifisitas sistem skor gangguan kognitif hari ke-30 pascastroke iskemik akut.

**Hasil:** Sejumlah 140 subjek diikutkan dalam penelitian dengan rata rata usia 62,8 tahun, dimana yang jenis kelamin laki-laki berjumlah 86 (61,4%) dan perempuan 54 (38,6%). Sembilan puluh satu subjek (65%) mengalami gangguan kognitif pascastroke iskemik akut. Analisis multivariat menunjukkan usia >70 tahun, tingkat pendidikan ≤6 tahun, skor *Barthel Index* ≤4 dan skor mRS >3 saat didiagnosis, jumlah lesi multipel, dan lokasi lesi korteks merupakan faktor prediktor independen yang mempengaruhi gangguan kognitif 30 hari pascastroke iskemik akut. Skor prediktor yang dikembangkan memperoleh nilai diskriminasi AUC sebesar 82,6% (95%CI:0,757-0,896) dan nilai kalibrasi sebesar  $p>0,366$ . Sistem skor mempunyai rentang nilai 0–7, dengan titik potong ≥1 memiliki nilai sensitivitas 86,8% dan nilai spesifisitas 59,2%.

**Kesimpulan:** Skor prediktor yang dikembangkan mempunyai performa baik dalam memprediksi terjadinya gangguan kognitif pada hari ke-30 pascastroke iskemik akut.

**Kata kunci:** skor prediktor, stroke iskemik akut, gangguan kognitif, *post-stroke cognitive impairment* (PSCI).

## PREDICTION SCORE FOR POST-STROKE COGNITIVE IMPAIRMENT AFTER ACUTE ISCHEMIC STROKE

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### ABSTRACT

**Background:** There was an increment in number of patients suffered from ischemic stroke and post-stroke cognitive impairment. In addition, the post-stroke cognitive impairment often discovered too late and had already developed into post-stroke dementia. There were only few studies that developed scoring system of predictor factors for cognitive impairment post-acute ischemic stroke in Indonesia.

**Objective:** To develop scoring system of predictor factors of cognitive impairment for post-stroke ischemic patients.

**Method:** For study purpose, patients included were more than 18 years old that diagnosed with acute ischemic stroke who has undergone *Mini-Mental State Examination* (MMSE) and *Clock Drawing Test* (CDT) examination at day-30 at Bethesda Hospital Yogyakarta. The retrospective cohort study design and samples were obtained from stroke registry and medical records. Patients who had a history of cognitive impairment and incomplete medical records were excluded. The result of MSSE and CDT at day-30 were the outcome of this study. To determine the relationship between the independent variable and the dependent variable, it was analyzed using Chi-Square method followed by multivariate logistic regression of Hosmer and Lemeshow with backward *Likelihood-Ratio* (LR) method and by assessing the final *Area under the Curve* (AUC) model. Then the final model was transformed into a scoring system to determine the value of probability prediction of *Post-Stroke Cognitive Impairment* (PSCI), the optimal cut-off point, the sensitivity value and specificity value of the cognitive impairment scoring system at day-30 after acute ischemic stroke.

**Result:** A total of 140 subjects were included in the study with an average age of 62,8 years, 86 (61,4%) male and 54 (38,6%) female. Ninety-one subjects, which is 65% from total subjects, experienced post-stroke cognitive impairment. The analysis of multivariate showed age >70 years, education level ≤6 years, modified Rankin score >3 at diagnosis, Barthel Index score ≤4 at diagnosis, the number of multiple lesions and the location of lesion in the cortex were an independent predictor factors affecting cognitive impairment 30 days after acute ischemic stroke. The developed predictor score obtained AUC discrimination value of 82.6% (95%CI:0.757-0.896) and calibration value of p>0.366. The scoring system had a value range of 0-7, with a cut-off ≥1 had a sensitivity value of 86.8% and a specificity value of 59.2%.

**Conclusion:** The predictor score had a good performance in predicting the occurrence of post-stroke cognitive impairment (PSCI) at day-30 after acute ischemic stroke

**Keyword:** Prediction score, acute ischemic stroke, cognitive impairment, post-stroke cognitive impairment (PSCI)