

## ABSTRAK

**Latar Belakang:** *Postoperative nausea and vomiting* (PONV) merupakan komplikasi yang sering terjadi setelah anestesi umum, dengan insidensi 30–80% pada pasien berisiko. Berbagai skor prediksi telah dikembangkan, antara lain Apfel, Koivuranta, dan Sinclair, namun belum ada standar baku yang paling akurat.

**Tujuan:** Menilai dan membandingkan kemampuan skor Apfel, Koivuranta, dan Sinclair dalam memprediksi kejadian PONV pada pasien dewasa yang menjalani anestesi umum di RSUP Dr. Kariadi.

**Metode:** Penelitian analitik observasional prospektif pada 92 pasien dewasa yang menjalani anestesi umum. Kejadian PONV dicatat hingga 24 jam pascaoperasi, dengan pembagian fase *early* ( $\leq 12$  jam) dan *late* ( $> 12$  jam). Analisis dilakukan menggunakan uji chi-square, kurva ROC-AUC, dan regresi logistik multivariat untuk menentukan faktor risiko signifikan.

**Hasil:** Insidensi PONV total sebesar 70,7% (*early* 64,1%; *late* 59,8%). Analisis bivariat menunjukkan bahwa jenis kelamin perempuan, usia  $< 50$  tahun, riwayat PONV, status merokok, serta jenis pembedahan risiko tinggi berhubungan signifikan dengan kejadian PONV ( $p < 0,05$ ). Nilai ROC-AUC ketiga skor berada pada kategori sedang: Apfel 0,63–0,65; Koivuranta 0,67–0,70; Sinclair 0,72–0,75. Analisis multivariat menemukan faktor risiko signifikan untuk *early* PONV adalah usia  $< 50$  tahun (OR 8,38;  $p = 0,002$ ) dan perempuan (OR 15,01;  $p = 0,001$ ). Pada *late* PONV, faktor signifikan adalah usia  $< 50$  tahun (OR 4,13;  $p = 0,048$ ), riwayat PONV (OR 18,51;  $p = 0,039$ ), pembedahan risiko tinggi (OR 30,21;  $p = 0,017$ ), dan perempuan, sementara merokok bersifat protektif (OR 0,11;  $p = 0,007$ ). Nagelkerke  $R^2$  lebih tinggi pada model *late* (0,589) dibanding *early* (0,448).

**Kesimpulan:** Skor Sinclair menunjukkan kemampuan prediksi paling baik dibanding Apfel dan Koivuranta, terutama pada fase *late* PONV. Penelitian ini menegaskan pentingnya strategi profilaksis antiemetik berbasis risiko (*risk-adapted prophylaxis*) dalam praktik klinis.

**Kata kunci:** PONV, Apfel, Koivuranta, Sinclair, anestesi umum

## ABSTRACT

**Background:** Postoperative nausea and vomiting (PONV) remains one of the most common complications after general anesthesia, with an incidence of 30–80% in high-risk patients. Several predictive scores have been developed, including Apfel, Koivuranta, and Sinclair, but no universal gold standard has been established.

**Objective:** To evaluate and compare the predictive performance of Apfel, Koivuranta, and Sinclair scores for PONV in adult patients undergoing general anesthesia at Dr. Kariadi General Hospital.

**Methods:** This was a prospective observational analytic study on 92 adult patients undergoing general anesthesia. PONV was recorded within 24 hours postoperatively, classified into early ( $\leq 12$  hours) and late ( $> 12$  hours) phases. Data were analyzed using chi-square test, ROC-AUC curves, and multivariate logistic regression to identify significant risk factors.

**Results:** The overall incidence of PONV was 70.7% (early 64.1%; late 59.8%). Bivariate analysis revealed significant associations between PONV and female gender, age  $< 50$  years, history of PONV, smoking status, and high-risk surgery ( $p < 0.05$ ). ROC-AUC values for the three scores indicated moderate predictive ability: Apfel 0.63–0.65, Koivuranta 0.67–0.70, Sinclair 0.72–0.75. Multivariate analysis identified significant risk factors for early PONV as age  $< 50$  years (OR 8.38;  $p = 0.002$ ) and female gender (OR 15.01;  $p = 0.001$ ). For late PONV, significant predictors were age  $< 50$  years (OR 4.13;  $p = 0.048$ ), history of PONV (OR 18.51;  $p = 0.039$ ), high-risk surgery (OR 30.21;  $p = 0.017$ ), and female gender, while smoking was protective (OR 0.11;  $p = 0.007$ ). The Nagelkerke  $R^2$  was higher for late PONV (0.589) compared to early PONV (0.448).

**Conclusion:** The Sinclair score demonstrated the best predictive performance compared to Apfel and Koivuranta, particularly for late PONV. These findings support the implementation of risk-adapted prophylaxis strategies in clinical practice.

**Keywords:** PONV, Apfel, Koivuranta, Sinclair, general anesthesia

