

INTISARI

PENGUNAAN *HIGH-FLOW NASAL CANNULA* (HFNC) DI RUANG RAWAT INAP REGULER PADA PASIEN ANAK DENGAN PNEUMONIA: STUDI *PRE* DAN *POST* INTERVENSI PENYEDIAAN DAN PENGGUNAAN SARANA HFNC DI RUMAH SAKIT TERSIER

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Latar Belakang. Pneumonia masih menjadi salah satu penyebab kematian terbesar pada anak. Terapi oksigen konvensional sebagai lini pertama mengatasi distress napas memiliki keterbatasan, sedangkan *high-flow nasal cannula* (HFNC) diharapkan dapat mengurangi kebutuhan intubasi. Namun, efektivitas HFNC di bangsal anak belum banyak dievaluasi.

Tujuan. Menilai dampak penggunaan HFNC terhadap angka intubasi, admisi ke PICU, angka kematian dan lama rawat inap pasien anak dengan distress napas di bangsal.

Metode. Penelitian komparatif dua periode dilakukan di bangsal anak rumah sakit tersier dengan data terapi oksigen konvensional sebelum HFNC tersedia (Januari–Desember 2023) dan data setelah HFNC diterapkan (Januari–Desember 2025). Subjek penelitian adalah pasien anak pneumonia usia 1 bulan–18 tahun dengan distress napas. Analisis data dengan uji Chi-square atau Fisher's exact test dan Paired t-test atau Mann-Whitney.

Hasil. Setelah implementasi di bangsal, HFNC menurunkan risiko kematian absolut 30,4% dibandingkan terapi oksigen konvensional (RR 2,08; IK 95% 1,13–9,71; $p = 0,010$). Penggunaan HFNC juga mengurangi risiko intubasi 11,6% (RR 1,46; IK 95% 0,71–3,0; $p = 0,290$), mengurangi risiko admisi ke PICU 9,5% (RR 1,28; IK 95% 0,71–2,31, $p = 0,409$), dan mengurangi lama rawat 1,45 hari, walaupun secara statistik tidak berbeda bermakna dengan penggunaan oksigen konvensional. Semakin berat komorbid yang dialami oleh pasien maka risiko untuk intubasi meningkat 3,2 kali, sehingga komorbid juga berhubungan secara tidak langsung pada kematian (Adj. OR 3,20; IK 95% 1,19–8,62, $p = 0,021$).

Kesimpulan. Penggunaan HFNC di bangsal anak meningkatkan perbaikan klinis sehingga mengurangi risiko kematian, kebutuhan intubasi, admisi ke PICU dan lama rawat. Meskipun tidak ada perbedaan yang bermakna pada angka intubasi dan admisi ke PICU, HFNC merupakan alternatif oksigenasi yang aman dan potensial untuk pasien anak pneumonia dengan distress napas ringan-sedang.

Kata kunci: HFNC, distress napas, pneumonia

ABSTRACT

USE OF HIGH-FLOW NASAL CANNULA (HFNC) IN THE WARD IN PEDIATRIC PATIENTS WITH PNEUMONIA: A PRE AND POST- INTERVENTION STUDY OF HFNC PROVISION AND USE IN A TERTIARY HOSPITAL

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Background. Pneumonia remains one of the leading causes of death in children. Conventional oxygen therapy, as the first-line treatment for respiratory distress, has limitations, whereas high-flow nasal cannula (HFNC) is expected to reduce the need for intubation. However, the effectiveness of HFNC in pediatric wards has not been widely evaluated.

Objective. To assess the impact of HFNC use on mortality rates, intubation rates, PICU admission, and length of hospital stay in pediatric patients with respiratory distress in the ward.

Methods. A comparative two-period study was conducted in the pediatric ward of a tertiary hospital. Data on conventional oxygen therapy before HFNC availability (January–December 2023) and after HFNC implementation (January–December 2025) were collected. The study subjects were pediatric pneumonia patients aged 1 month to 18 years with respiratory distress. Data were analyzed using the Chi-square or Fisher's exact test, and Paired t-test or Mann–Whitney test.

Results. After implementation in the ward, HFNC reduced the absolute risk of death by 30.4% compared to conventional oxygen therapy (RR 2.08; 95% CI 1.13–9.71; $p = 0.010$). HFNC use also reduced the risk of intubation by 11.6% (RR 1.46; 95% CI 0.71–3.0; $p = 0.290$), reduced the risk of PICU admission by 9.5% (RR 1.28; 95% CI 0.71–2.31, $p = 0.409$), and reduced the length of stay by 1.45 days, although not statistically significant than conventional oxygen therapy. The more severe a patient's comorbidities, the 3.2-fold increased risk of intubation. Comorbidities were also indirectly associated with mortality (Adj. OR 3.20; 95% CI 1.19–8.62, $p = 0.021$).

Conclusion. The use of HFNC in pediatric wards improves clinical improvement, reducing the risk of death, the need for intubation, PICU admissions, and length of stay. Although no significant differences were found in intubation rate and PICU admission, HFNC is a safe and potentially beneficial oxygenation alternative for pediatric pneumonia patients with mild to moderate respiratory distress.

Keywords: HFNC, respiratory distress, pneumonia