ABSTRAK

PENGARUH APLIKASI *NON-INVASIVE ESTIMATION OF DIALYSIS ADEQUACY USING UREA REDUCTION RATE* TERHADAP EFISIENSI WAKTU PERHITUNGAN *UREA REDUCTION RATE* PADA PASIEN HEMODIALISA

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Latar Belakang: Hemodialisis merupakan terapi pengganti ginjal yang esensial bagi pasien penyakit ginjal kronik stadium akhir. Adekuasi dialisis yang diukur dengan *Urea Reduction Rate* menjadi parameter utama dalam memastikan efektivitas terapi. Namun, penghitungan *Urea Reduction Rate* secara manual masih memiliki kekurangan, seperti memakan waktu, risiko kesalahan, dan ketidakterpaduan data. Penelitian ini bertujuan mengembangkan aplikasi *Non-Invasive Estimation of Dialysis Adequacy Using Urea Reduction Rate* yang terintegrasi dengan Rekam Medis Elektronik untuk meningkatkan efisiensi penghitungan *Urea Reduction Rate*.

Metode: Penelitian menggunakan desain *research and development* dengan model *Analysis, Design, Development, Implementation, and Evaluation*. Aplikasi diuji pada 30 perawat hemodialisis di RSUD Banyumas, menggunakan desain *quasi experimental non-equivalent control group post-test only* dengan kelompok kontrol dan intervensi. Analisis data meliputi uji validitas dan reliabilitas aplikasi, uji statistik bivariat untuk membandingkan efisiensi waktu antara metode manual dan elektronik.

Hasil: Perbandingan antara kelompok kontrol dan intervensi menunjukkan perbedaan signifikan ($p<0,05$) pada efisiensi waktu. Kelompok kontrol memerlukan waktu rata-rata 6,53 menit untuk menghitung URR, sedangkan kelompok intervensi hanya membutuhkan waktu rata-rata 2,13 menit ($p = 0,000$). Aplikasi ini juga dinilai valid (IQR = 0,916) dan reliabel (*alpha cronbach* = 0,877) serta disepakati dengan kesepakatan baik oleh para pakar (koefisien *kappa* 0,612).

Kesimpulan: Pengembangan aplikasi ini meningkatkan efisiensi waktu dalam perhitungan *Urea Reduction Rate* dan penetapan adekuasi dialisis. Hal ini memberikan manfaat praktis bagi peningkatan mutu pelayanan hemodialisis, sekaligus mendukung efisiensi sistem kesehatan di Indonesia.

Kata kunci: Dialisis, Adekuasi dialisis, *Urea reduction rate*

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ABSTRACT

THE EFFECT OF NON-INVASIVE ESTIMATION OF DIALYSIS ADEQUACY USING UREA REDUCTION RATE ON THE EFFICIENCY OF UREA REDUCTION RATE CALCULATION TIME IN HAEMODIALYSIS PATIENTS

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Background: Haemodialysis is an essential renal replacement therapy for patients with end-stage kidney disease. Dialysis adequacy, measured by the Urea Reduction Rate, serves as a key parameter in ensuring the effectiveness of this therapy. However, manual Urea Reduction Rate calculation presents several challenges, including time consumption, error risks, and data fragmentation. This study aims to develop a *Non-Invasive Estimation of Dialysis Adequacy Using Urea Reduction Rate* application integrated with Electronic Medical Records to enhance Urea Reduction Rate calculation efficiency.

Methods: The study utilised a research and development design with the *Analysis, Design, Development, Implementation, and Evaluation* model. The application was tested on 30 haemodialysis nurses at Banyumas District Hospital, employing a quasi-experimental non-equivalent control group post-test only design with control and intervention groups. Data analysis included validity and reliability testing of the application and bivariate statistical tests to compare time, accuracy, and efficiency between manual and electronic methods.

Results: Comparison between the control and intervention groups showed a significant difference ($p<0.05$) in time efficiency. The control group took an average of 6.53 minutes to calculate URR. Meanwhile, the intervention group only took an average of 2.13 minutes ($p = 0.000$). The app was also rated as valid (IQR = 0.916) and reliable (Cronbach's alpha = 0.877) with good agreement by experts (kappa coefficient 0.612).

Conclusion: The development of the application enhances efficiency in Urea Reduction Rate calculation and the determination of dialysis adequacy. This provides practical benefits for improving the quality of haemodialysis services while also supporting the efficiency of the healthcare system in Indonesia.

Keywords: Dialysis**,** Dialysis Adequacy, Urea Reduction Rate.

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