

## ABSTRAK

**Latar belakang** : Penyakit ginjal tahap akhir (PGTA) merupakan stadium lanjut dari penyakit ginjal kronis (PGK) yang ditandai dengan penurunan fungsi ginjal berat dan memerlukan terapi pengganti ginjal, salah satunya hemodialisis. Kondisi ini sering disertai dengan disfungsi otonom yang berkontribusi dalam peningkatan morbiditas dan mortalitas pasien, sehingga berdampak terhadap kualitas hidup pasien. *Heart-rate variability* (HRV) digunakan sebagai indikator aktivitas saraf otonom dan berpotensi menjadi parameter fisiologis untuk menilai kualitas hidup. Hingga saat ini, masih sedikit studi mengenai hubungan HRV dengan kualitas hidup pada pasien PGTA.

**Tujuan** : Mengetahui hubungan antara HRV dengan kualitas hidup pada pasien hemodialisis rutin.

**Metode** : Penelitian ini merupakan studi observasional analitik dengan pendekatan *retrospective cross sectional*. Sebanyak 80 pasien hemodialisis rutin di RSUP Dr. Sardjito dipilih menggunakan *nonrandomized purposive sampling* sesuai kriteria inklusi-eksklusi. HRV diukur menggunakan *finger plethysmograph SA-3000P*, sedangkan kualitas hidup dinilai menggunakan kuesioner *Kidney Disease Quality of Life (KDQOL)-36*. Analisis meliputi uji univariat, uji korelasi, uji regresi linear multivariat, serta *analisis receiver operating characteristic (ROC)*.

**Hasil** : Beberapa komponen HRV tidak menunjukkan hubungan yang bermakna dengan domain KDQOL-36. Namun, komponen *root mean square of successive differences (RMSSD)* dan *high frequency (HF)* yang merefleksikan aktivitas parasimpatis, menunjukkan hubungan signifikan dalam analisis korelasi Spearman (RMSSD:  $r = 0,231$ ;  $p = 0,039$ ; HF:  $r = 0,248$ ;  $p = 0,027$ ).

**Kesimpulan** : Terdapat hubungan positif lemah yang signifikan secara statistik antara heart-rate variability (HRV), yaitu komponen RMSSD dan HF, dengan kualitas hidup dalam domain *effects of kidney disease (EKD) KDQOL-36* pada pasien PGTA yang menjalani hemodialisis di RSUP Dr. Sardjito.

**Kata Kunci** : penyakit ginjal tahap akhir, hemodialisis, *heart-rate variability*, kualitas hidup.

## ABSTRACT

**Background** : End-stage renal disease (ESRD) is an advanced stage of chronic kidney disease (CKD) characterized by severe loss of kidney function that requires renal replacement therapy, one of which is hemodialysis. This condition is often accompanied by autonomic dysfunction, which contributes to increased patient morbidity and mortality and negatively affects quality of life. Heart-rate variability (HRV) is used as an indicator of autonomic nervous system activity and has the potential to serve as a physiological parameter for assessing quality of life. To date, limited studies have investigated the association between HRV and quality of life in patients with ESRD.

**Objective** : To determine the association between HRV and quality of life in patients undergoing maintenance hemodialysis.

**Methods** : This was an analytical observational study with a retrospective cross sectional design. A total of 80 maintenance hemodialysis patients at Dr. Sardjito General Hospital were selected using non-randomized purposive sampling according to predefined inclusion and exclusion criteria. HRV was measured using the SA-3000P finger plethymograph, while quality of life was assessed using the Kidney Disease Quality of Life (KDQOL)-36 questionnaire. Data analysis included univariate analysis, correlation tests, multivariate linear regression, and receiver operating characteristic (ROC) analysis.

**Results** : Several HRV components did not show a significant association with KDQOL-36 domains. However, the root mean square of successive differences (RMSSD) and high frequency (HF) components, which reflect parasympathetic activity, showed a significant association in Spearman correlation analysis (RMSSD:  $r = 0,231$ ;  $p = 0,039$ ; HF:  $r = 0,248$ ;  $p = 0,027$ ).

**Conclusion** : There is a weak but statistically significant positive association between HRV, specifically the RMSSD and HF components, and quality of life in the effects of kidney disease (EKD) domain of the KDQOL-36 in ESRD patients undergoing hemodialysis at RSUP Dr. Sardjito.

**Keywords** : end stage renal disease, hemodialysis, heart-rate variability, quality of life.