

KORELASI KADAR HbA1c DENGAN KADAR UREUM PADA PENDERITA DIABETES MELLITUS TIPE 2 DI RSJD DR.RM.SOEDJARWADI KLATEN

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ABSTRAK

Latar Belakang: Diabetes melitus tipe 2 (DMT2) merupakan penyakit metabolik kronis dengan prevalensi yang terus meningkat. Indonesia menempati peringkat ke-lima dunia dengan 20,4 juta penderita pada tahun 2024, dan Kabupaten Klaten menempati urutan kedua tertinggi di Jawa Tengah. Hiperglikemia tidak terkontrol berpotensi menyebabkan komplikasi mikrovaskular, khususnya nefropati diabetik, yang ditandai dengan peningkatan kadar ureum sebagai indikator penurunan fungsi ginjal. Pemeriksaan HbA1c sebagai *gold standard* kontrol glikemik jangka panjang dinilai memiliki keterkaitan dengan parameter fungsi ginjal, namun data korelasi HbA1c dan ureum di RSJD DR. RM. Soedjarwadi Klaten masih terbatas.

Tujuan Penelitian: Mengetahui korelasi antara kadar HbA1c tidak terkontrol ($\geq 7\%$) dengan kadar ureum pada penderita Diabetes Melitus Tipe 2 di RSJD DR.RM.Soedjarwadi Klaten.

Metode Penelitian: Penelitian observasional analitik dengan desain *cross-sectional retrospektif* menggunakan data sekunder diperoleh dari rekam medis pasien DM tipe 2 periode November 2025–Februari 2026. Sampel sebanyak 111 data diperoleh dengan teknik *total sampling* sesuai kriteria inklusi dan eksklusi. Analisis menggunakan uji Kolmogorov-Smirnov dan korelasi Rank Spearman dengan tingkat kepercayaan 95%.

Hasil Penelitian: Mayoritas responden memiliki HbA1c kategori tidak terkontrol (65,8%) dan sangat tidak terkontrol (34,2%), dengan rerata kadar HbA1c 9,5%. Kadar ureum tidak normal (tinggi) ditemukan pada 26,1% responden, dengan rerata 39,5 mg/dl. Distribusi data tidak normal pada kedua variabel ($p=0,026$ dan $p=0,000$; $p<0,05$). Uji korelasi Rank Spearman menunjukkan korelasi sangat lemah $r=0,093$ dan tidak signifikan $p=0,332$ ($p>0,05$).

Kesimpulan: Tidak terdapat korelasi yang bermakna antara kadar HbA1c tidak terkontrol ($\geq 7\%$) dengan kadar ureum pada penderita Diabetes Melitus Tipe 2 di RSJD DR.RM.Soedjarwadi Klaten, dengan kekuatan korelasi sangat lemah dan arah positif. Ureum sebagai parameter tunggal dinilai kurang sensitif mendeteksi gangguan fungsi ginjal dini pada pasien DMT2.

Kata Kunci: Diabetes Melitus Tipe 2, HbA1c, Ureum, Nefropati Diabetik, Korelasi

CORRELATION BETWEEN HbA1c LEVELS AND UREA LEVELS IN TYPE 2 DIABETES MELLITUS PATIENTS AT RSJD DR.RM.SOEDJARWADI KLATEN

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ABSTRACT

Background: Type 2 diabetes mellitus (T2DM) is a chronic metabolic disease with a continuously increasing global prevalence. Indonesia ranks fifth in the world with 20.4 million people affected in 2024, while Klaten Regency holds the second highest prevalence in Central Java. Uncontrolled hyperglycemia poses a significant risk for microvascular complications, particularly diabetic nephropathy, which is characterized by elevated serum urea levels as an indicator of declining renal function. The measurement of glycated hemoglobin (HbA1c) serves as the *gold standard* for assessing long-term glycemic control and has been proposed to correlate with renal function parameters; however, data regarding the correlation between HbA1c and urea levels at RSJD DR.RM. Soedjarwadi Klaten remain limited.

Objective: To determine the correlation between uncontrolled HbA1c levels ($\geq 7\%$) and serum urea levels in patients with type 2 diabetes mellitus at RSJD DR.RM. Soedjarwadi Klaten.

Methods: This study employed a quantitative analytical observational method with a *cross-sectional retrospective* design. Secondary data were retrieved from the medical records of T2DM outpatients at RSJD DR.RM. Soedjarwadi Klaten during the period of November 2025 to February 2026. A total of 111 samples were selected through *total sampling* based on predetermined inclusion and exclusion criteria. Data normality was assessed using the Kolmogorov-Smirnov test, followed by Spearman Rank correlation analysis at a 95% confidence level.

Results: The majority of respondents exhibited uncontrolled HbA1c levels (65.8%) and very poorly controlled HbA1c levels (34.2%), with a mean HbA1c of 9.5%. Elevated serum urea levels were observed in 26.1% of respondents, with a mean urea level of 39.5 mg/dL. Both variables demonstrated non-normal distributions ($p=0.026$ and $p=0.000$; $p<0.05$). Spearman Rank correlation analysis revealed a very weak and statistically non-significant correlation between HbA1c and urea levels ($r=0.093$, $p=0.332$; $p>0.05$).

Conclusion: There was no significant correlation between uncontrolled HbA1c levels ($\geq 7\%$) and serum urea levels in type 2 diabetes mellitus patients at RSJD DR.RM. Soedjarwadi Klaten, with a very weak positive correlation. Urea as a single parameter appears insufficient for detecting early-stage renal impairment in T2DM patients, suggesting the need for more sensitive markers such as eGFR and UACR in clinical practice.

Keywords: Type 2 Diabetes Mellitus, HbA1c, Urea, Diabetic Nephropathy, Correlation