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Glycemic variability, ulcer severity, and 30-day post-discharge emergency department revisits in geriatric patients with diabetic foot ulcers: A single-center retrospective cohort study

Abstract

Aim: The prognostic value of continuous glucose monitoring (CGM)-derived glycemic variability (GV) in inpatients with diabetic foot ulcers (DFUs) is uncertain.

Materials and Methods: This retrospective cohort included 114 patients aged ≥ 65 years with type 2 diabetes and a DFU. CGM metrics were mean glucose, standard deviation (SD), glucose coefficient of variation (GluCV), and high and low blood glucose indices (HBGI/LBGI). Wagner grade was categorized as moderate (1–2) or high (3–5). Outcomes were 30-day emergency department (ED) revisit, sepsis, intensive care unit (ICU) admission, length of stay, and mortality. Adjusted models included age, sex, diabetes duration, glycated hemoglobin (HbA1c), GluCV, Wagner grade, peripheral arterial disease (PAD), and hypertension.

Results: Mean age was 76.9 years and 44.7% were male. ED revisit occurred in 43.9%, sepsis in 57.0%, ICU admission in 56.1%, and 30-day mortality in 46.5%. Mean glucose was higher with sepsis (198 vs 185 mg/dL; $p = 0.037$). High Wagner grade showed non-significant associations with mortality (adjusted odds ratio (aOR) 1.91; $p = 0.11$) and ICU admission (aOR 1.93; $p = 0.11$). Male sex was associated with lower ED revisit odds (aOR 0.41; $p = 0.029$), but this was the only nominally significant adjusted association and was not corrected for multiple testing. HbA1c and GluCV were not independently associated with any outcome; SD, HBGI, and LBGI showed no significant unadjusted associations.

Conclusion: Short inpatient CGM-derived GV metrics did not demonstrate incremental prognostic value. Wagner grade provided the most consistent signal, whereas the male-sex association was exploratory and requires external confirmation.

Keywords: Diabetic foot; aged; continuous glucose monitoring; patient readmission; emergency service, hospital; sepsis

INTRODUCTION

Diabetic foot ulcers (DFUs) are a common and serious complication of long-standing diabetes mellitus. Globally, approximately 18.6 million people with diabetes develop a DFU each year, and the lifetime risk of a foot ulcer among individuals with diabetes is between 19% and 34%. DFUs account for most non-traumatic lower-extremity amputations, with up to 84% of diabetes-related amputations attributable to DFUs. Prognosis after DFU is poor; 5-year mortality rates

range from approximately 30% to nearly 50%, with variation according to comorbidity burden and ulcer severity (1,2). The 5-year mortality rate is approximately 49%, and the risk of death is substantially higher than in people with diabetes without a foot ulcer (3). Major amputation carries an even worse prognosis, particularly in older adults and patients with end-stage renal disease or other major comorbidities (4). At the population level, DFU-related amputation is also associated with increased cardiovascular mortality (5).

Beyond inpatient deterioration, 30-day post-discharge emergency department (ED) revisit and unplanned readmission are important indicators of care-transition quality in DFU. Holscher and colleagues reported unplanned 30-day readmission in approximately 22% of patients treated in a multidisciplinary limb-preservation service, most commonly because of wound deterioration, vascular complications, or systemic illness (6). In a population-based analysis of 25,911 DFU discharges, all-cause 30-day return to care occurred in approximately 30%, with infection the most frequent readmission diagnosis (7). Reported risk factors include suboptimal glycemic control, peripheral arterial disease (PAD), and discharge to a skilled nursing facility (8,9). Whether continuous glucose monitoring (CGM)-derived glycemic variability (GV) metrics add prognostic information beyond ulcer severity and conventional clinical factors remains uncertain.

Older adults with DFU frequently have frailty, cognitive impairment, polypharmacy, and cardiovascular or renal comorbidity, all of which modify the risks of intensive glycemic treatment (10). Glycated hemoglobin (HbA1c) reflects average glucose exposure but not short-term fluctuations. CGM provides dynamic measures such as time in range and GV that may better characterize daily glycemic excursions (10,11). Observational data have linked CGM-derived measures with wound-healing outcomes (11,12). Structural ulcer classifications such as Wagner and SINBAD remain central to DFU risk stratification, whereas dynamic GV metrics are not incorporated into routine prognostic frameworks (13,26). Evidence is particularly limited for hospitalized geriatric patients and short-term outcomes.

We therefore conducted a single-center retrospective cohort study of geriatric inpatients with type 2 diabetes hospitalized with an active DFU. We evaluated whether CGM-derived measures were associated with 30-day post-discharge ED revisit, sepsis, intensive care unit (ICU) admission, length of stay, and 30-day mortality. The prespecified adjusted models evaluated HbA1c and glucose coefficient of variation (GluCV) together with age, sex, diabetes duration, and Wagner grade; glucose standard deviation (SD), high blood glucose index (HBGI), and low blood glucose index (LBGI) were examined in descriptive, unadjusted, correlation, and discrimination analyses.

MATERIALS AND METHODS

Study Design and Setting

We conducted a single-center retrospective cohort study at a tertiary state hospital in Ankara, Türkiye. Consecutive inpatients aged 65 years or older with established type 2 diabetes mellitus and an active diabetic foot ulcer admitted between January 1, 2026 and March 31, 2026 were screened for eligibility. The study was reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guideline and was conducted in accordance with the ethical principles set forth in the Declaration of Helsinki and its subsequent amendments. The protocol was reviewed and approved by the Non-Interventional Ethics Committee of the Ankara Provincial

Health Directorate, Republic of Türkiye Ministry of Health (approval number 2025-11-2, dated 16 December 2025). Given the retrospective design and the use of fully de-identified data extracted from existing electronic medical records, the requirement for written informed consent was waived by the ethics committee.

Participants

A total of 424 consecutive inpatients were screened for eligibility. Inclusion criteria were age ≥ 65 years, physician-confirmed type 2 diabetes, an active DFU during the index admission, and at least 24 hours of valid inpatient CGM data. Exclusion criteria were active end-stage cancer, end-stage heart failure (New York Heart Association (NYHA) class IV refractory to therapy), and absent or insufficient CGM data. Overall, 310 patients were excluded for one or more prespecified criteria, leaving a final analytic cohort of 114 patients (Figure 1). Reason-specific exclusion counts were not retained in the analytic file. The sampling frame was restricted to hospitalized patients with acute DFU-related illness and may have been further enriched for higher-acuity, insulin-managed presentations by the CGM requirement. Accordingly, the cohort does not represent the full spectrum of ambulatory or community-dwelling older adults with DFU.

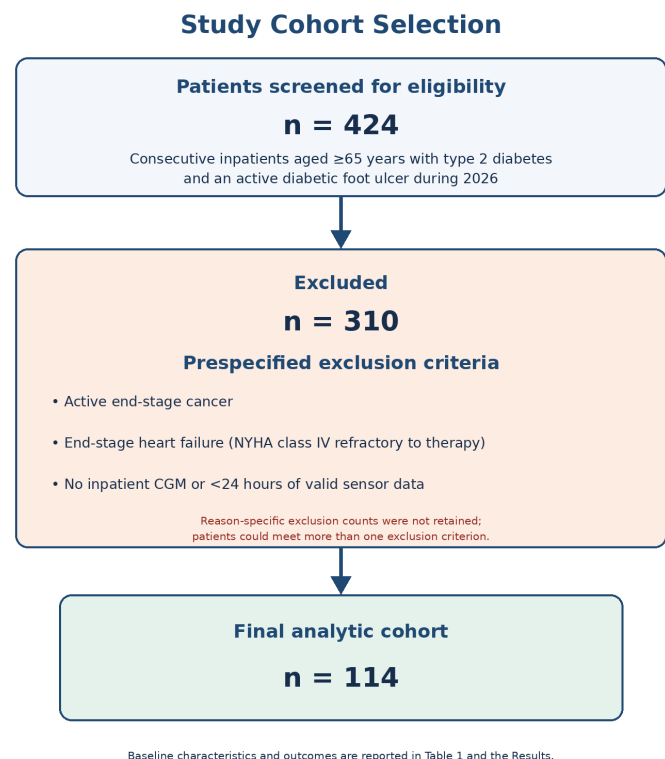


Figure 1. Flow diagram of cohort selection. A total of 424 consecutive inpatients were screened; 310 were excluded for one or more prespecified criteria, and 114 patients formed the final analytic cohort. The prespecified exclusion criteria were active end-stage cancer, end-stage heart failure (NYHA class IV refractory to therapy), and absent inpatient CGM or fewer than 24 hours of valid sensor data. Reason-specific exclusion counts were not retained in the analytic file. Baseline characteristics and outcomes are reported in Table 1 and the Results. Abbreviations: CGM, continuous glucose monitoring; NYHA, New York Heart Association.

Data Collection

Data were extracted from the institutional electronic medical record by two trained clinical investigators using a standardized case-report form. Demographic variables included age, sex, and body mass index; diabetes-related variables included disease duration and admission HbA1c. Comorbidity data included the presence or absence of PAD, defined as a documented history of PAD or ankle-brachial index < 0.9 in the medical record, and hypertension, defined as a prior physician diagnosis or use of antihypertensive medication (15,16). Glucose was monitored with the FreeStyle Libre 2 Plus intermittently scanned CGM system (Abbott Diabetes Care Ltd., Witney, Oxfordshire, United Kingdom). CGM-derived measures were mean sensor glucose (mg/dL), SD (mg/dL), GluCV (%), and the Kovatchev HBGI and LBGI. Eligibility required at least 24 hours of valid sensor data, and all indices were calculated over the full available inpatient recording. Using glucose in mg/dL, $f(BG) = 1.509 \times [(\ln BG)^{1.084} - 5.381]$ and $r(BG) = 10 \times f(BG)^2$. For each of n valid readings, the low-side contribution was $r(BG)$ when $f(BG) < 0$ and 0 otherwise, and the high-side contribution was $r(BG)$ when $f(BG) > 0$ and 0 otherwise. LBGI and HBGI were the respective mean low- and high-side contributions across all n readings. Wound severity was classified by the Wagner scale as moderate (grades 1–2) or high (grades 3–5).

Outcomes

The prespecified outcomes were 30-day post-discharge ED revisit, sepsis, ICU admission, in-hospital length of stay, and all-cause mortality within 30 days of admission. An ED revisit was defined as any unplanned presentation to the institutional ED within 30 days after discharge, regardless of whether it resulted in rehospitalization or was directly related to the DFU. Cause-specific adjudication was not performed. Sepsis was defined according to Sepsis-3 as suspected infection with an increase in Sequential Organ Failure Assessment score of ≥ 2 points. Outcomes were ascertained from the medical record and verified against discharge summaries and institutional ED records.

Statistical Analysis

Continuous variables are presented as mean $\pm$ standard deviation or median with interquartile range (IQR) according to distribution, assessed by the Shapiro–Wilk test. Categorical variables are reported as absolute numbers and percentages. Between-group comparisons used the Mann–Whitney U test for continuous variables and the chi-square or Fisher exact test for categorical variables, as appropriate. The Spearman rank correlation coefficient quantified associations between glycemic indices and continuous outcomes.

Discriminative performance of each glycemic index for binary outcomes was evaluated by receiver-operating-characteristic (ROC) analysis with estimation of the area under the curve (AUC). Multivariable logistic regression was used to estimate adjusted odds ratios (aOR) with 95% confidence intervals (CIs) for 30-day post-discharge ED revisit, sepsis, ICU admission, and 30-day mortality. Multivariable linear regression was used

for length of stay. Models included age, sex, diabetes duration, HbA1c, GluCV, Wagner grade, PAD, and hypertension as a priori clinically relevant covariates. Variables were selected on the basis of biological plausibility and prior literature rather than stepwise procedures, to avoid selection bias in this modest sample. The eight covariates were fixed in advance for every model, which yielded approximately 6 to 7 events per variable across the binary outcomes. This figure is modestly below the conventional rule-of-thumb of ten events per variable, and it reflects a deliberate decision to retain a clinically interpretable adjustment set rather than to maximize statistical efficiency in this modest sample. Because multiple outcomes and multiple exposures were examined, no formal correction for multiple comparisons was applied. The analyses were therefore regarded as exploratory, and associations that reached nominal statistical significance should be interpreted accordingly. A two-sided P value < 0.05 was considered statistically significant. Analyses were performed in Python 3.11 (pandas 2.2, statsmodels 0.14, scikit-learn 1.5).

RESULTS

Cohort Characteristics

Among 424 patients screened, 310 were excluded for one or more prespecified criteria and 114 met all eligibility criteria (Figure 1). Mean age was 76.9 ± 7.0 years (range 65 – 89), 51 patients (44.7%) were male, mean diabetes duration was 11.7 ± 3.9 years, and mean HbA1c was $8.65 \pm 1.05\%$. PAD was present in 58 patients (50.9%) and hypertension in 79 patients (69.3%). Sixty-five patients (57.0%) had high-grade Wagner ulcers. Baseline characteristics are shown in Table 1. Age, sex, diabetes duration, HbA1c, mean glucose, SD, GluCV, and HBGI did not differ significantly by Wagner category (all $p > 0.10$). LBGI was higher in the moderate-grade group than in the high-grade group (median 0.21 vs 0.05; $p = 0.017$), but both values were very low, indicating minimal hypoglycemic risk.

Adverse Outcomes Including 30-Day ED Revisit

Adverse outcomes were frequent. Fifty patients (43.9%) had an unplanned ED revisit within 30 days after discharge, 65 (57.0%) developed sepsis, 64 (56.1%) required ICU admission, and 53 (46.5%) died within 30 days of admission. Mean length of stay was 25.0 ± 8.4 days. The observed ED revisit rate was higher than estimates reported in predominantly younger DFU cohorts, although no formal between-study comparison was performed. HbA1c distributions overlapped substantially between Wagner groups. GluCV did not distinguish patients with and without any binary outcome, including ED revisit (Figure 2). Patients with PAD had numerically higher rates of ED revisit (50.0% vs 37.5%), sepsis (62.1% vs 51.8%), and 30-day mortality (53.4% vs 39.3%) compared with those without PAD, although these differences did not reach statistical significance (all $p > 0.10$). Similarly, hypertensive patients had higher rates of ED revisit (48.1% vs 34.3%) and ICU admission (59.5% vs 48.6%) than normotensive patients (all $p > 0.12$).

Glycemic Indices and Outcomes

In unadjusted analyses, mean sensor glucose was higher in patients who developed sepsis than in those who did not (median 198, IQR 179 – 226 vs 185, IQR 164 – 215 mg/dL; $p = 0.037$). HbA1c, SD, GluCV, HBGI, and LBGI did not differ significantly by sepsis status (all $p > 0.13$), and no glycemic measure differed by mortality, ICU admission, or ED revisit status (all $p > 0.19$). The correlation between LBGI and length of stay did not reach statistical significance ($\rho = 0.17$; $p = 0.065$); other correlations were weak. AUCs for the binary outcomes ranged from 0.41 to 0.62, indicating limited discrimination.

Wagner Grade and Sex: Adjusted Associations With Outcomes

High Wagner grade was associated with numerically higher rates of ED revisit (49.2% vs 36.7%), ICU admission (63.1%

vs 46.9%), and 30-day mortality (53.8% vs 36.7%). In adjusted models, high Wagner grade had an aOR of 1.91 for mortality (95% CI 0.87 – 4.18; $p = 0.11$) and 1.93 for ICU admission (95% CI 0.87 – 4.28; $p = 0.11$) (Table 2; Figure 3 shows the mortality model). Neither HbA1c nor GluCV was independently associated with mortality, sepsis, ICU admission, length of stay, or ED revisit. Neither PAD nor hypertension was independently associated with any outcome (all $p > 0.20$).

Male sex was associated with lower adjusted odds of 30-day ED revisit (aOR 0.41, 95% CI 0.18 – 0.91; $p = 0.029$; Table 2). This was the only nominally significant adjusted association among the outcomes and covariates examined, and no correction for multiple comparisons was applied. It should therefore be regarded as exploratory, and a chance finding cannot be excluded.

Table 1. Baseline demographic, glycemic, and clinical characteristics of 114 geriatric inpatients with type 2 diabetes and a diabetic foot ulcer, stratified by Wagner grade

Characteristic	Overall (N = 114)	Moderate (1–2) (n = 49)	High (3–5) (n = 65)	p value
Demographics				
Age, years (mean $\pm$ SD)	76.9 $\pm$ 7.0	76.2 $\pm$ 6.6	77.4 $\pm$ 7.3	0.35
Male sex, n (%)	51 (44.7)	23 (46.9)	28 (43.1)	0.83
Diabetes duration, years (mean $\pm$ SD)	11.7 $\pm$ 3.9	11.9 $\pm$ 3.8	11.4 $\pm$ 3.9	0.55
PAD, n (%)	58 (50.9)	22 (44.9)	36 (55.4)	0.27
Hypertension, n (%)	79 (69.3)	32 (65.3)	47 (72.3)	0.43
Glycemic indices				
HbA1c, % (mean $\pm$ SD)	8.65 $\pm$ 1.05	8.6 $\pm$ 1.1	8.7 $\pm$ 1.0	0.52
Mean sensor glucose, mg/dL (mean $\pm$ SD)	196.9 $\pm$ 29.4	195.8 $\pm$ 30.0	197.7 $\pm$ 29.1	0.78
Glucose SD, mg/dL (mean $\pm$ SD)	44.9 $\pm$ 8.8	46.3 $\pm$ 8.7	43.8 $\pm$ 8.8	0.11
GluCV, % (mean $\pm$ SD)	21.7 $\pm$ 2.0	21.7 $\pm$ 1.9	21.8 $\pm$ 2.1	0.86
HBGI*	11.75 (8.79 – 16.30)	10.82 (9.16 – 16.10)	12.91 (8.74 – 16.39)	0.248
LBGI*	0.10 (0.01 – 0.35)	0.21 (0.03 – 0.76)	0.05 (0.01 – 0.24)	0.017
Adverse outcomes, n (%)				
30-day post-discharge ED revisit	50 (43.9)	18 (36.7)	32 (49.2)	0.25
Sepsis (Sepsis-3)	65 (57.0)	29 (59.2)	36 (55.4)	0.83
ICU admission	64 (56.1)	23 (46.9)	41 (63.1)	0.13
30-day all-cause mortality	53 (46.5)	18 (36.7)	35 (53.8)	0.10
Length of stay, days (mean $\pm$ SD)	25.0 $\pm$ 8.4	24.8 $\pm$ 7.6	25.2 $\pm$ 9.0	0.83

Values are mean $\pm$ standard deviation, n (%), or median (interquartile range) as appropriate. p values are from the Mann–Whitney U test for continuous variables and the chi-square or Fisher exact test for categorical variables. *HBGI and LBGI are presented as median (IQR) because of their non-normal distribution. Abbreviations: ED, emergency department; GluCV, glucose coefficient of variation; HBGI, high blood glucose index; ICU, intensive care unit; LBGI, low blood glucose index; PAD, peripheral arterial disease; SD, standard deviation.

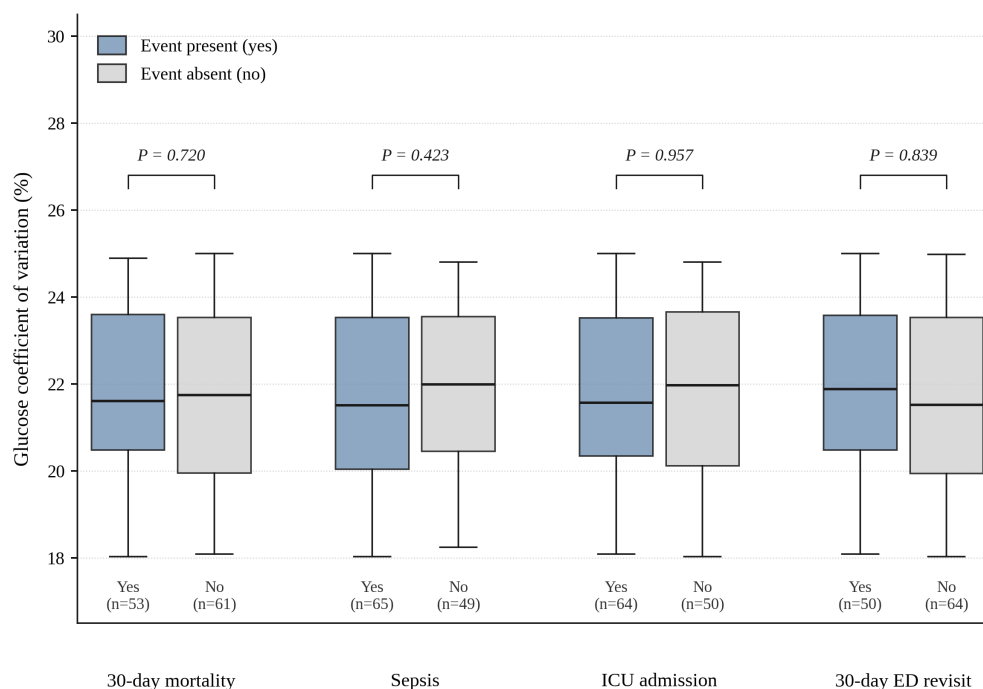


Figure 2. Glucose coefficient of variation across 30-day mortality, sepsis, ICU admission, and 30-day ED revisit. Boxplots show the median and interquartile range; P values are from Mann–Whitney U tests. GluCV distributions are shown according to event status for each prespecified binary outcome. None of the four comparisons was statistically significant (all $p > 0.40$), indicating that single-admission GluCV did not distinguish patients with and without these outcomes. Abbreviations: ED, emergency department; ICU, intensive care unit; GluCV, glucose coefficient of variation.

Table 2. Multivariable models for adverse outcomes: adjusted odds ratios (logistic regression) for binary outcomes including 30-day post-discharge emergency department revisit, and adjusted regression coefficients (linear regression) for length of stay

Variable	30-day mortality aOR (95% CI); p	Sepsis aOR (95% CI); p	ICU admission aOR (95% CI); p	30-day ED revisit aOR (95% CI); p	Length of stay β (95% CI); p
Age (per 1 year)	1.04 (0.99 – 1.10); 0.14	1.03 (0.98 – 1.09); 0.26	1.02 (0.97 – 1.08); 0.38	1.02 (0.97 – 1.07); 0.42	0.12 (-0.11 to 0.35); 0.31
Male sex	0.68 (0.31 – 1.51); 0.35	0.78 (0.35 – 1.73); 0.54	0.72 (0.32 – 1.60); 0.42	0.41 (0.18 – 0.91); 0.029	-1.84 (-5.02 to 1.34); 0.25
Diabetes duration (per 1 year)	1.04 (0.94 – 1.15); 0.44	1.05 (0.95 – 1.16); 0.35	1.02 (0.92 – 1.13); 0.72	1.03 (0.93 – 1.14); 0.58	-0.08 (-0.51 to 0.35); 0.72
HbA1c (per 1%)	1.11 (0.76 – 1.63); 0.58	1.22 (0.82 – 1.82); 0.33	1.15 (0.78 – 1.70); 0.49	1.08 (0.74 – 1.57); 0.69	0.74 (-0.82 to 2.30); 0.35
GluCV (per 1%)	1.00 (0.93 – 1.08); 0.95	1.02 (0.95 – 1.10); 0.58	1.01 (0.94 – 1.09); 0.78	1.01 (0.94 – 1.08); 0.82	0.09 (-0.22 to 0.40); 0.57
Wagner high (vs moderate)	1.91 (0.87 – 4.18); 0.11	1.74 (0.78 – 3.87); 0.17	1.93 (0.87 – 4.28); 0.11	1.58 (0.72 – 3.47); 0.26	2.41 (-0.78 to 5.60); 0.14
PAD	1.63 (0.73 – 3.63); 0.23	1.42 (0.63 – 3.22); 0.40	1.31 (0.58 – 2.96); 0.52	1.49 (0.67 – 3.33); 0.33	1.52 (-1.72 to 4.76); 0.36
Hypertension	1.28 (0.52 – 3.17); 0.59	1.18 (0.47 – 2.99); 0.72	1.44 (0.58 – 3.59); 0.43	1.62 (0.65 – 4.01); 0.30	0.89 (-2.85 to 4.63); 0.64
Model fit	Pseudo R ² 0.072	Pseudo R ² 0.052	Pseudo R ² 0.061	Pseudo R ² 0.068	R ² 0.083

All models include age, sex, diabetes duration, HbA1c, GluCV, Wagner grade, PAD, and hypertension as covariates. Binary outcomes were modeled by multivariable logistic regression; length of stay was modeled by multivariable linear regression. The 30-day ED revisit outcome captured any unplanned emergency department presentation within 30 days of discharge. Abbreviations: aOR, adjusted odds ratio; CI, confidence interval; β , regression coefficient; ED, emergency department; GluCV, glucose coefficient of variation; ICU, intensive care unit; PAD, peripheral arterial disease.

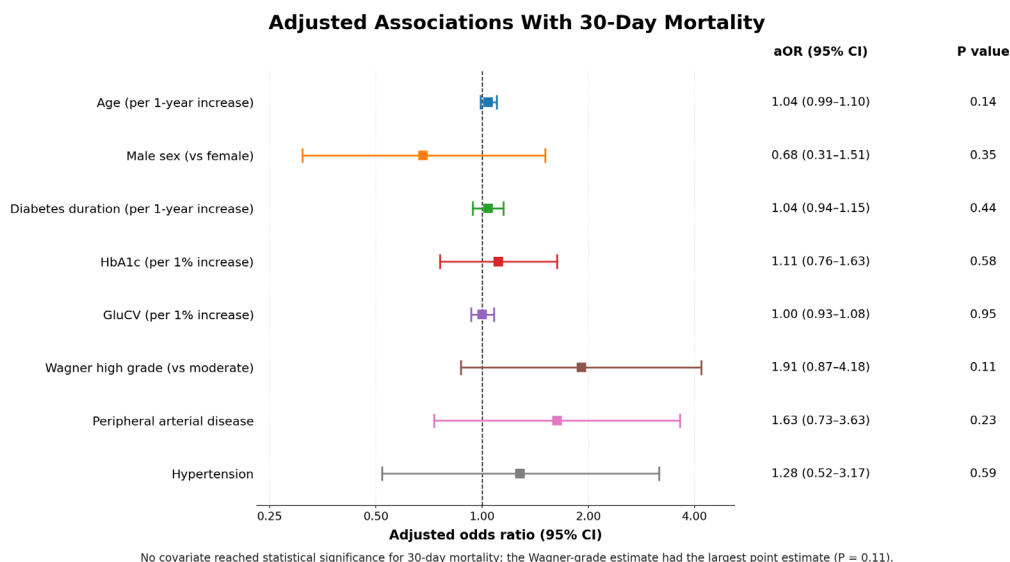


Figure 3. Adjusted associations with 30-day mortality. The forest plot shows adjusted odds ratios and 95% confidence intervals from the multivariable logistic regression model including age, sex, diabetes duration, HbA1c, GluCV, Wagner grade, PAD, and hypertension. The dashed vertical line indicates an odds ratio of 1. Abbreviations: aOR, adjusted odds ratio; CI, confidence interval; GluCV, glucose coefficient of variation; PAD, peripheral arterial disease.

DISCUSSION

In this single-center retrospective cohort of 114 geriatric inpatients with type 2 diabetes and an active DFU, adverse outcomes were common: more than half developed sepsis or required ICU admission, 46.5% died within 30 days, and 43.9% returned to the ED within 30 days after discharge. HbA1c and GluCV were not independently associated with the evaluated outcomes. SD, HBGI, and LBG1 also showed no significant unadjusted associations and limited discrimination. Wagner grade produced the most consistent clinical signal, with adjusted odds ratios of approximately 1.9 for mortality and ICU admission, although neither estimate reached statistical significance. This direction is consistent with validation studies of structural ulcer-severity classifications (13).

The 43.9% post-discharge ED revisit rate identifies an important care-transition burden. Holscher et al. reported that wound deterioration accounted for a large proportion of unplanned 30-day readmissions, with vascular and systemic complications contributing substantially (6). Alvarez Avendano et al. similarly demonstrated that older adults presenting to the ED with non-specific complaints have elevated revisit and mortality rates, underscoring the vulnerability of geriatric populations during care transitions (15). Hicks et al. demonstrated the added cost of DFU-related readmissions and the frequent involvement of surgical care (14). A randomized discharge-planning program in patients with DFU supports structured education and surveillance to reduce preventable post-discharge complications (18). Together, these findings support early wound review, caregiver education, medication reconciliation, and explicit return precautions. The high prevalence of PAD (50.9%) and hypertension (69.3%) in our

cohort aligns with prior reports indicating that PAD affects up to 50% of DFU patients and is independently associated with poor wound healing and amputation (16). Mishra et al. reported that PAD patients undergoing peripheral vascular interventions had a 30-day readmission rate of approximately 18%, with diabetes and hypertension as key contributing comorbidities (17).

The association between male sex and lower ED revisit odds should not be interpreted as evidence of a protective biological effect or used to guide sex-specific care. It was a single nominally significant result without multiplicity correction. Potential behavioral, social, or care-access explanations remain speculative and cannot be resolved by this retrospective study.

Our 30-day mortality rate of 46.5% was higher than the 26-week and 52-week mortality reported by Holman and colleagues in a cohort ascertained at presentation with a new foot ulcer (19). The populations differ substantially: our cohort was older, hospitalized, and enriched for acute infection and organ dysfunction. The direction of the Wagner-grade associations is also consistent with studies showing that deeper or more advanced ulcers carry worse clinical outcomes (13).

The absence of a detected association between GV and the study outcomes differs from several outpatient wound-healing studies (20,21). Caruso et al. reported a higher risk of healing failure among patients with GluCV $\geq 36\%$ (21), whereas Thomason et al. found that long-term HbA1c variability was not associated with healing after adjustment for ulcer characteristics (22). Our GluCV distribution was narrow and centered well below 36%, which reduces the ability to detect an exposure–outcome gradient (23). In addition, HBGI and LBG1 were derived from short inpatient recordings rather than longitudinal monitoring.

In this high-acuity population, ulcer severity, infection, vascular disease, inflammation, and cardiorenal comorbidity may dominate short-term risk.

Taken together, the null findings should be interpreted as a failure to detect an independent association under conditions of restricted GV and limited statistical precision, rather than as definitive evidence that no association exists. Larger studies spanning a wider GV range and longer monitoring periods are required.

A baseline group comparison should be distinguished from prognostic modeling. HBGI did not differ by Wagner category. LBGI differed nominally between groups but remained very low in both. In adjusted analyses, only HbA1c and GluCV were entered as glycemic covariates, and neither was independently associated with an outcome. SD, HBGI, and LBGI were evaluated in unadjusted comparisons, correlations, and ROC analyses and showed no meaningful prognostic signal.

The unadjusted association between higher mean sensor glucose and sepsis is biologically plausible because acute hyperglycemia can impair innate immune function and amplify inflammatory responses (24). Stress hyperglycemia has also been associated with systemic inflammation and adverse outcomes in hospitalized patients with infection (25). Nevertheless, the present result does not establish an independent effect. Current International Working Group on the Diabetic Foot (IWGDF) and Infectious Diseases Society of America (IDSA) guidance emphasizes urgent evaluation and inpatient management when diabetic foot infection is accompanied by systemic or severe features (26).

Several findings require cautious interpretation. The confidence intervals around the Wagner-grade estimates were wide, and limited statistical precision may have contributed to the absence of conventional significance. The male-sex association is hypothesis-generating only. Although sex-related differences in pain and healthcare-seeking behavior have been described, the mechanisms relevant to ED use in this cohort were not measured (27).

This study has important limitations. The single-center design and modest sample size limit generalizability and precision; the binary models contained approximately 6–7 events per variable, and model fit was low. Important prognostic factors, including PAD severity, renal function, C-reactive protein, albumin, nutritional status, frailty, osteomyelitis, and overall comorbidity burden, were unavailable, leaving residual confounding. CGM was limited to the index admission, and the exact monitoring duration varied among patients beyond the minimum 24-hour eligibility requirement. Although the screening log documented 424 patients screened and 310 excluded, reason-specific exclusion counts were not retained. Selection bias related to the requirement for inpatient CGM therefore remains difficult to quantify. Sepsis was retrospectively ascertained, ED revisits to other institutions may have been missed, revisit causes were not adjudicated, and death was not modeled as a competing event for post-discharge

ED revisit. The findings should not be extrapolated to ambulatory DFU populations. Strengths include consistent CGM-derived metrics, prespecified adjustment variables, and evaluation of a clinically relevant geriatric inpatient cohort.

CONCLUSION

In hospitalized geriatric patients with type 2 diabetes and DFU, short inpatient CGM-derived GV metrics did not demonstrate incremental prognostic value for clinical deterioration or ED revisit. Wagner grade provided the most consistent clinical signal, although its adjusted associations with mortality and ICU admission did not reach statistical significance. The association between male sex and lower ED revisit odds was exploratory and requires independent confirmation. Larger multicenter studies with longitudinal CGM, complete vascular and comorbidity assessment, and standardized post-discharge outcome ascertainment are needed.

Conflict of Interests

The authors declare that there is no conflict of interest in the study.

Financial Disclosure

The authors declare that there is no financial support.

Ethical Approval

This study was reviewed and approved by the Non-Interventional Ethics Committee of the Ankara Provincial Health Directorate, Republic of Türkiye Ministry of Health (approval number 2025-11-2, dated 16 December 2025). The study was conducted in accordance with the ethical principles set forth in the Declaration of Helsinki and its subsequent amendments.

Informed Consent

Given the retrospective design and the use of fully de-identified data extracted from existing electronic medical records, the requirement for written informed consent was waived by the ethics committee.

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