Additional file 1

Association Between Glycemic Variability and Pupillary Autonomic Function in Type 2 Diabetes: A Cross-Sectional Study

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Table S1. Independent association between D1% and CGM SD across adjustment sets.

Model / adjustment set	*n*	CGM SD, β	95% CI	*P* value	Adjusted R^2
Base model (age, sex, HbA1c, diabetes duration)	53	0.229	0.074 to 0.385	0.005	0.137
+ AMP%	53	0.185	0.060 to 0.310	0.005	0.452
+ Peripheral neuropathy	53	0.231	0.073 to 0.389	0.005	0.118
+ Diabetic retinopathy stage	53	0.228	0.072 to 0.385	0.005	0.124
+ CVRR[a]	46	0.310	0.134 to 0.487	0.001	0.201
Stepwise-selected model (CGM SD + HbA1c)[b]	53	0.244	0.094 to 0.395	0.002	0.146

The dependent variable is D1% in every model; the coefficient shown is for CGM SD. The base model is the main multivariable model; each subsequent row adds one additional (post hoc) covariate as a robustness check. The CGM SD–D1% association remained significant under every adjustment (β ≈ 0.19–0.31; $P \leq 0.005$); the largest change was a 19% attenuation after adjustment for AMP%. β, unstandardized regression coefficient; CI, confidence interval; CVRR, coefficient of variation of the electrocardiographic R–R interval.

[a] Analyzed in the subset with reliable CVRR recordings ($n = 46$). In this matched subset the base-model coefficient was β = 0.294 (95% CI, 0.118 to 0.470; $P = 0.002$); adding CVRR left it essentially unchanged (β = 0.310), and CVRR itself was not independently associated with D1% (β = −0.646; 95% CI, −1.614 to 0.323; $P = 0.185$).

[b] Backward elimination (removal at $P > 0.10$, with CGM SD forced into the model) and forward selection by the Akaike information criterion both converged on this model. Stepwise selection is exploratory and is reported for confirmation only.

Table S2. Independent association between D1% and %CV across adjustment sets.

Model / adjustment set	*n*	%CV, β	95% CI	*P* value	Adjusted R^2
Base model (age, sex, HbA1c, diabetes duration)	53	0.303	0.041 to 0.565	0.024	0.080
+ AMP%	53	0.267	0.060 to 0.474	0.013	0.429
+ Peripheral neuropathy	53	0.303	0.038 to 0.568	0.026	0.060
+ Diabetic retinopathy stage	53	0.305	0.042 to 0.569	0.024	0.069
+ CVRR[a]	46	0.353	0.064 to 0.642	0.018	0.085
Stepwise-selected model (%CV alone)[b]	53	0.285	0.032 to 0.538	0.028	0.074

The dependent variable is D1% in every model; the models correspond to those in Table S1, with %CV substituted for CGM SD, and the coefficient shown is for %CV (per 1-percentage-point increase). The association remained significant under every adjustment (β ≈ 0.27–0.35; $P \leq 0.028$), although the overall model *P* exceeded 0.05 except with AMP% added and in the stepwise-selected model. β, unstandardized regression coefficient; CI, confidence interval; %CV, coefficient of variation of sensor glucose; CVRR, coefficient of variation of the electrocardiographic R–R interval.

[a] Analyzed in the subset with reliable CVRR recordings ($n = 46$); CVRR itself was not independently associated with D1% ($P = 0.323$).

[b] Backward elimination and forward selection, performed as in Table S1, both retained %CV alone; HbA1c was not retained.