

GLYCEMIC VARIABILITY IN HEMODIALYSIS PATIENTS WITH TYPE 2 DIABETES: PREDICTIVE VALUE OF WAIST-TO-HEIGHT RATIO

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Background:

Glycemic variability is highly prevalent in insulin-treated type 2 diabetes (T2D) patients undergoing hemodialysis (HD), but simple anthropometric predictors are lacking. We investigated whether the waist-to-height ratio (WHtR) predicts glucose variability (GV) in this setting.

Methods:

This prospective observational study included 49 insulin-treated T2D patients on maintenance hemodialysis who underwent 20 days of continuous glucose monitoring (Dexcom One Plus). Patients were stratified by glucose standard deviation (SD) <50 vs ≥50 mg/dL. Associations between WHtR and CGM metrics were assessed, and multivariable regression analysis was performed to identify independent predictors of changes in (ΔTIR) between HD and non-HD days.

Results:

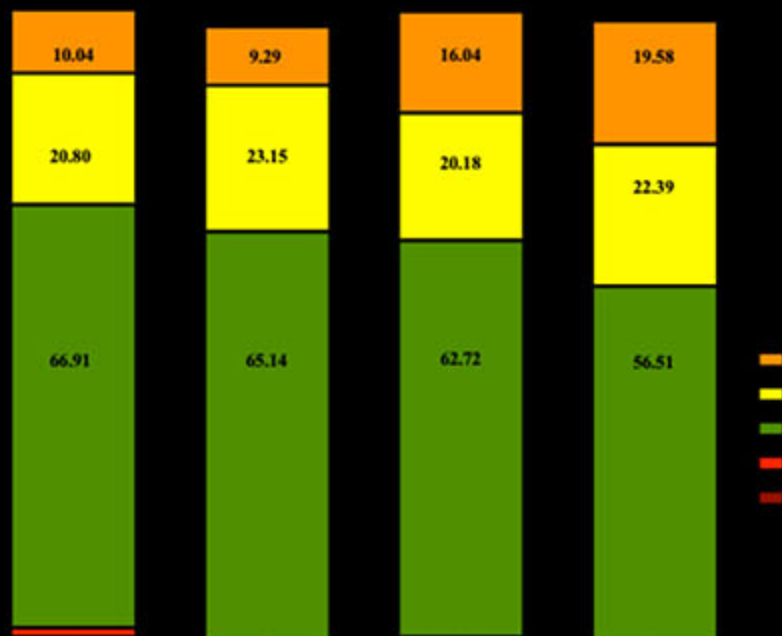


Figure 1. Times in Ranges distribution based on WHtR < 0.5 vs ≥ 0.5. Patients with lower WHtR showed lower TIR and higher TAR

WHtR was the only independent predictor of high glycemic variability correlating with lower TIR and higher glucose metrics in multivariable regression.

Conclusions:

WHtR independently predicts glycemic variability in insulin-treated T2D patients on HD. Along with hydration status and insulin requirements, it may help identify patients at risk for unstable glucose control, guiding individualized therapeutic strategies.

Characteristic	SD < 50 mg/dL (n = 29)	SD ≥ 50 mg/dL (n = 31)	p value
Age (years)	72.17 ± 9.31	72.59 ± 10.58	NS
Female sex (%)	50.0	45.8	NS
Diabetes duration (years)	18.7 ± 7.9	19.0 ± 7.3	NS
Basal-Bolus Insulin Regime (%)	60	75	NS
Insulin dose (UI/Kg/day)	0.022	0.041	0.05
Time on HD (years)	2.2 ± 3.0	2.6 ± 3.4	NS
Waist circumference (cm)	89.1 ± 16.1	80.3 ± 12.9	0.040
Waist-to-height ratio (WHtR)	0.560 ± 0.11	0.502 ± 0.08	0.032
BMI (kg/m ²)	29.4 ± 4.8	26.1 ± 6.3	0.007
Visceral fat area (cm ²)	111.9 ± 53.6	89.2 ± 51.9	NS
Phase angle (°)	5.43 ± 1.83	4.35 ± 0.88	0.003
Skeletal muscle index	7.97 ± 0.96	7.65 ± 1.39	NS
HbA1c (%)	5.96 ± 0.69	7.44 ± 1.42	<0.001
Mean glucose (mg/dL)	146.4 ± 22.0	198.9 ± 41.8	<0.001
Time in Range (%)	78.5 ± 12.7	45.4 ± 17.6	<0.001
CV (%)	26.5 ± 3.7	34.9 ± 7.3	<0.001
GMI (%)	6.83 ± 0.52	8.10 ± 0.99	<0.001
Interdialytic weight gain (%)	2.17 ± 0.74	2.29 ± 0.75	NS
Kt/V	1.99 ± 0.35	2.10 ± 0.41	NS