

HbA1c AND GLUCOSE MANAGEMENT INDICATOR RELATIONSHIP: IN WHICH SITUATIONS HbA1c DETERMINATION CAN BE AVOIDED?

C.NAVARRO MORENO, D.SÁNCHEZ RUIZ, E.GARCÍA GARCÍA, I.MARCHUETA ELIZAGARATE and A.GÓMEZ GILA

Pediatric Endocrinology Unit. Hospital Universitario Virgen del Rocío, Seville, Spain

CONTACT INFORMATION:
constanza.navarro.sspa@juntadeandalucia.es

INTRODUCTION

Continuous Glucose Monitoring (CGM) devices have introduced new metrics to assess metabolic situation of patients with **type 1 diabetes mellitus (T1DM)**.

Glucose management indicator (GMI) provides a proxy to **HbA1c**, however, these measures do not always match.

AIM

To evaluate the **concordance between GMI and HbA1c**, and determinate in which scenarios GMI could replace HbA1c.

SUBJECTS AND METHODS

Retrospective study of children and adolescents aged <18 years with T1DM using FreeStyleLibre® Flash Glucose Monitor

Data from the Libreview® cloud system correspond to **2 weeks period** and **sensor active ≥70%** of the time
The HbA1c is measured capillary by the DCA® Vantage analyzer

Inclusion criteria

- DM last ≥6 months
- Time between HbA1c determination and GCM evaluation ≤15 days.

Variables analyzed

Average glucose
CV
HbA1c
GMI
Time above range (TAR)
Time very high (TVH)
Time in range (TIR)
Time bellow range (TBR)
Time very low (TVL)
Time sensor is active
Glucose lectures/day.

Statistical analysis (Stata14 software)

Qualitative variables → frequencies Quantitative variables → mean (SD)

GMI and HbA1c are compared by the t Student-Fisher test.

Linear regression analysis examines the influence of the reported variables on the HbA1c-GMI difference, in case of association the cut off point of each variable at which GMI and HbA1c can be considered to be equivalent is determined by the **t Student-Fisher test**: first not significant value. A **p≤0.05** is considered **significant**.

RESULTS

→ **201 subjects (56.72% males)**

→ **4.59 years (3.12)** of T1DM evolution.

→ Time elapsed between the determination of HbA1c and the CGM evaluation is **0.0003 days (0.01)**

→ **Mean HbA1c is 7.2% (0.8)** and the **mean GMI is 7.49% (0.72)**, and they are significantly different (p<0.001). In 32.85% of the patients the HbA1c-GMI discordance is ≤0.2%.

Influence on HbA1c and GMI difference

Variables	Linear regression	Cut-off point
Average glucose	p=0.001	≤161 mg/dl
CV	p=0.181	
TAR	p=0.002	≤30%
TVH	p=0.004	≤6%
TIR	p=0.03	≥70%
TBR	p=0.002	≤0%
TVL	p=0.13	
Time of sensor active	p=0.098	
Glucose lectures/day	p=0.017	≥30

CONCLUSIONS

In case of average glucose ≤161 mg/dl, TAR ≤30%, TVH ≤6%, TIR ≥70%, TBR ≤0% or lectures/day ≥30, GMI agrees with HbA1c, and HbA1c does not add any information compared to the sensor, avoiding its determination is both time and cost saving

