Exploring the Role of Continuous Glucose Monitors (CGMs) in Healthspan Management

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Introduction

- Wearable devices have evolved beyond fitness tracking to become tools for healthspan management[1]
- Continuous glucose monitors (CGMs), historically used in diabetes self-management, are increasingly accessible and used outside insulin-treated populations[2,3], reflecting broader trends toward real-time digital health feedback and self-monitoring
- Prior research suggests that real-time glucose feedback can influence dietary choices, lifestyle awareness, and glycaemic control[4]; however, evidence on downstream effects on non-glycaemic, healthspan-relevant outcomes remains limited, particularly in real-world settings
- Using French electronic medical record (EMR) data, this study examines trends in CGM uptake and explores associations between CGM use and selected cardiometabolic biomarkers in adults with type 2 diabetes not treated with insulin and in individuals without diabetes
- The objective is to assess whether CGM use is associated with indicators of cardiovascular risk stabilisation

Methods

- Dataset: OMV – French Electronic Medical Records (EMR), including patient records from approximately 700 General Practitioner practices
- Two distinct adult populations:
  - A: Patients with type 2 diabetes mellitus (T2DM), not treated with insulin (n=822)
  - B: Individuals without diabetes (n=317)

Table 1. Population characteristics for each of the two distinct adult populations including median and range

	Pop. A: Patients with T2DM not treated with insulin		Pop. B: Individuals without diabetes	
	CGM users *(n=79)*	Non-CGM users *(n=158)*	CGM users *(n=164)*	Non-CGM users *(n=328)*
Age *Median (min-max)*	69 (50-83)	67 (45-88)	67 (27-83)	67 (22-83)
Gender *Count (proportion)*	44 (56%) Male/ 35 (44%) Female	88 (56%) Male/ 70 (44%) Female	101 (62%) Male/ 63 (38%) Female	202 (62%) Male/ 126 (38%) Female
BMI *Median (min-max)*	32.3 (25-38)	32.5 (22-37)	27.6 (18-34)	27.7 (16-34)
BP Medication *Count (proportion)*	45 (56%) Yes/ 34 (43%) No	120 (76%) Yes/ 38 (24%) No	74 (45%) Yes/ 90 (55%) No	146 (45%) Yes/ 182 (55%) No

- Intervention: CGM use (Abbott FreeStyle Libre, minimum usage period 28 days)
- Control: k-NN Matched control population with similar age, gender, weight, BMI, and Blood Pressure medication use; differences in demographic features were not significant
- Outcomes/biomarkers: Pre- vs. post-CGM comparisons using measurements of systolic blood pressure (SBP), BMI, and weight

Results

- Throughout Moving Annual Total (MAT) Oct '19 to '25, the number of patients with CGM prescriptions has increased over time across both populations (A: +442%, B: +279%)

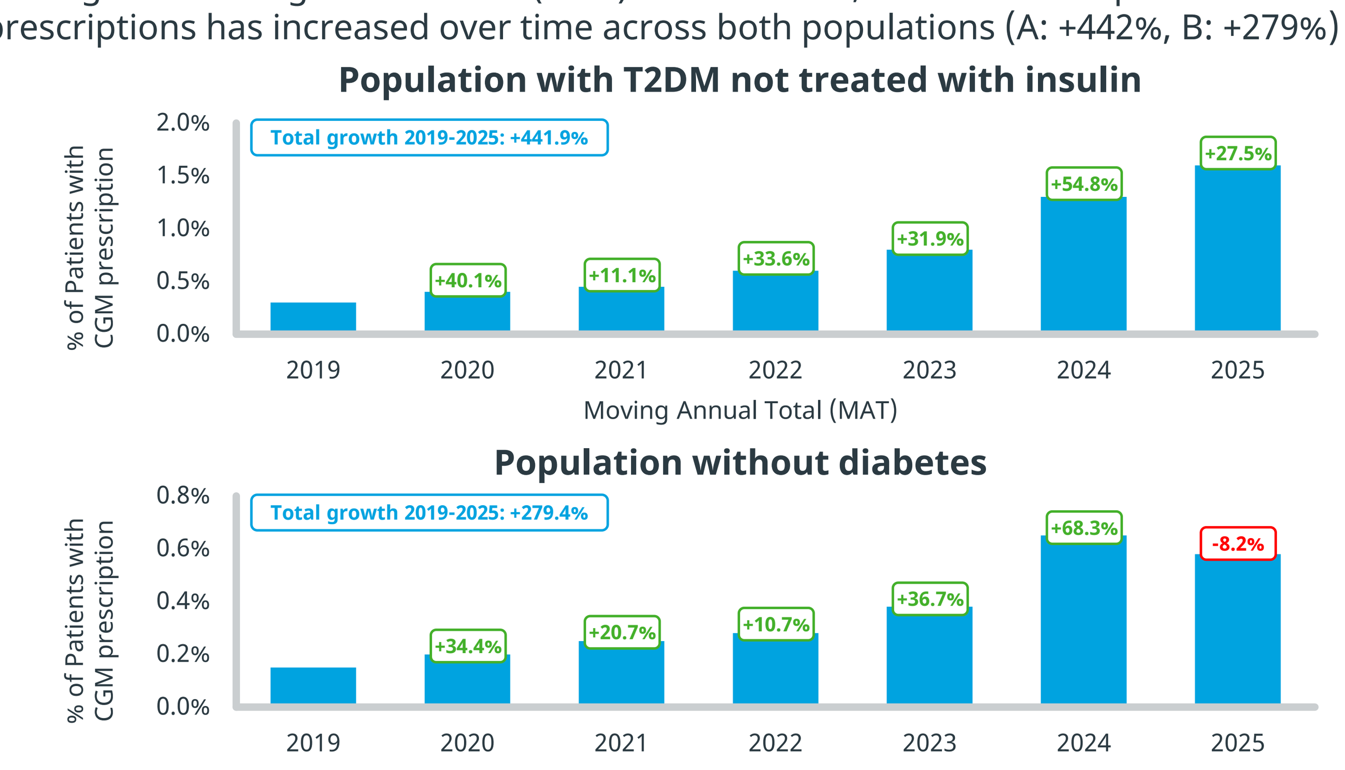

Figure 1. % of patients with CGM prescription from November 2018 to October 2025 by MAT; the observed MAT Oct 2025 in population B is most likely a data collection artefact

- Outcome analyses showed variable effects among patients with T2DM not treated with insulin stratified by CGM use (Table 2)

Table 2. Analysis of patients with T2DM not on insulin therapy stratified by CGM use

Biomarker	What was measured	Direction of effect	Statistical significance
SBP	SBP increase	**CGM users less likely to have an increase in SBP**	**Yes** (p = 0.048)
	SBP reduction	Minimal difference	No (p = 0.88)
BMI	% BMI change	No clear difference	No (p = 0.16)
	Movement across BMI categories	**More CGM users moved toward healthy BMI category**	**No**
Weight	% weight change	No difference	No

- Conversely, there was no statistical difference in the increase in SBP difference in population without diabetes (Table 3), suggesting population and subgroup differences

Table 3. Analysis in patients without diabetes stratified by CGM use

Biomarker	What was measured	Direction of effect	Statistical significance
SBP	SBP increase	No clear difference	No (p = 0.22)
	SBP reduction	Minimal difference	No (p = 0.424)
BMI	*Sample size too small for meaningful analysis*		
Weight	% weight change	No difference	No (p = 0.57)

Results for patient population with T2DM, not on insulin therapy

SBP analysis

- A 5-mmHg SBP reduction, associated with a 10% lower cardiovascular risk[5], was used as threshold
- CGM use was not associated with a reduction in SBP over the observational period (Fig. 2A)
- CGM use was associated with a lower probability of SBP increase, as indicated by Fisher's exact test (Figure 2B; risk ratio = 1.25)

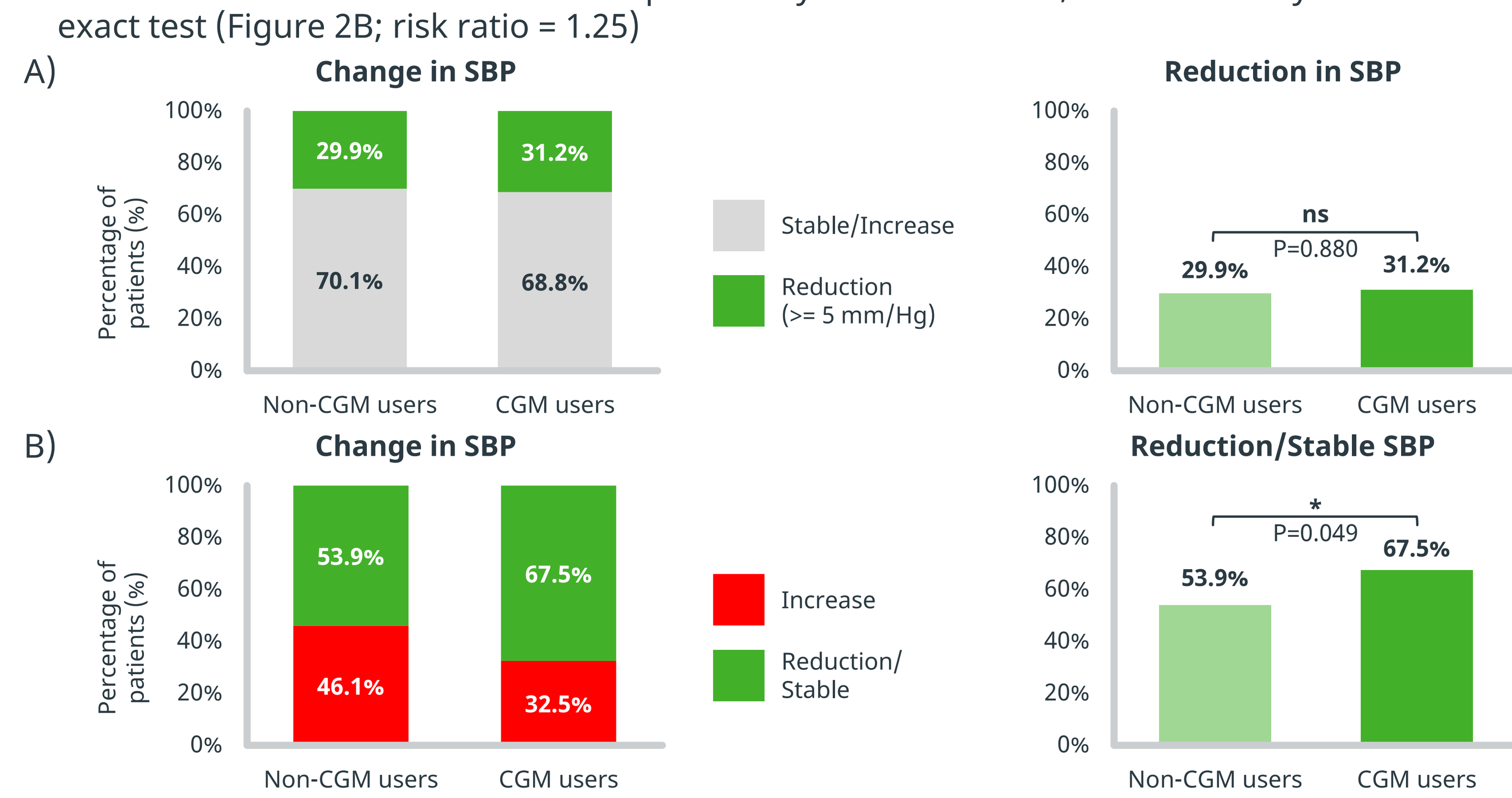

Figure 2. Bimodal analysis of SBP change over the observational period comparing CGM users and non-CGM users (Fisher's exact test). (A) SBP reduction vs. stable/increase (not significant). (B) SBP increase vs. stable/reduction (p=0.049; OR=0.56, risk ratio=1.25)

BMI analysis

- CGM users demonstrated higher mobility across BMI categories relative to non-CGM users (Fig. 3)

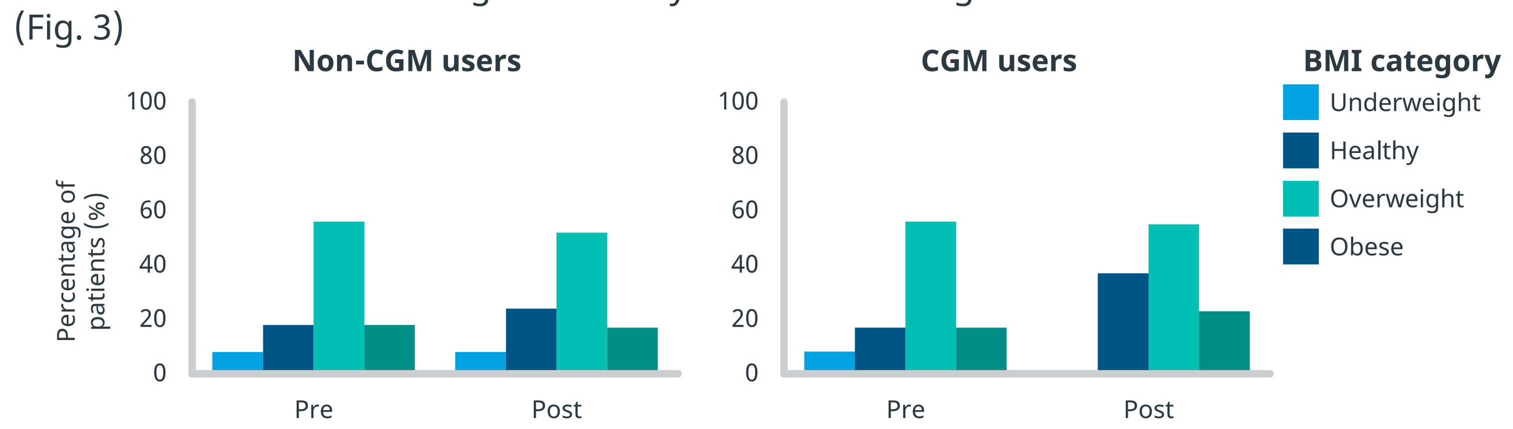

Figure 3. BMI category distribution pre- and post-observational period by CGM use

- However, transitions toward healthier BMI categories did not reach statistical significance *(OR = 4.3; non-significant*; Fig. 4)

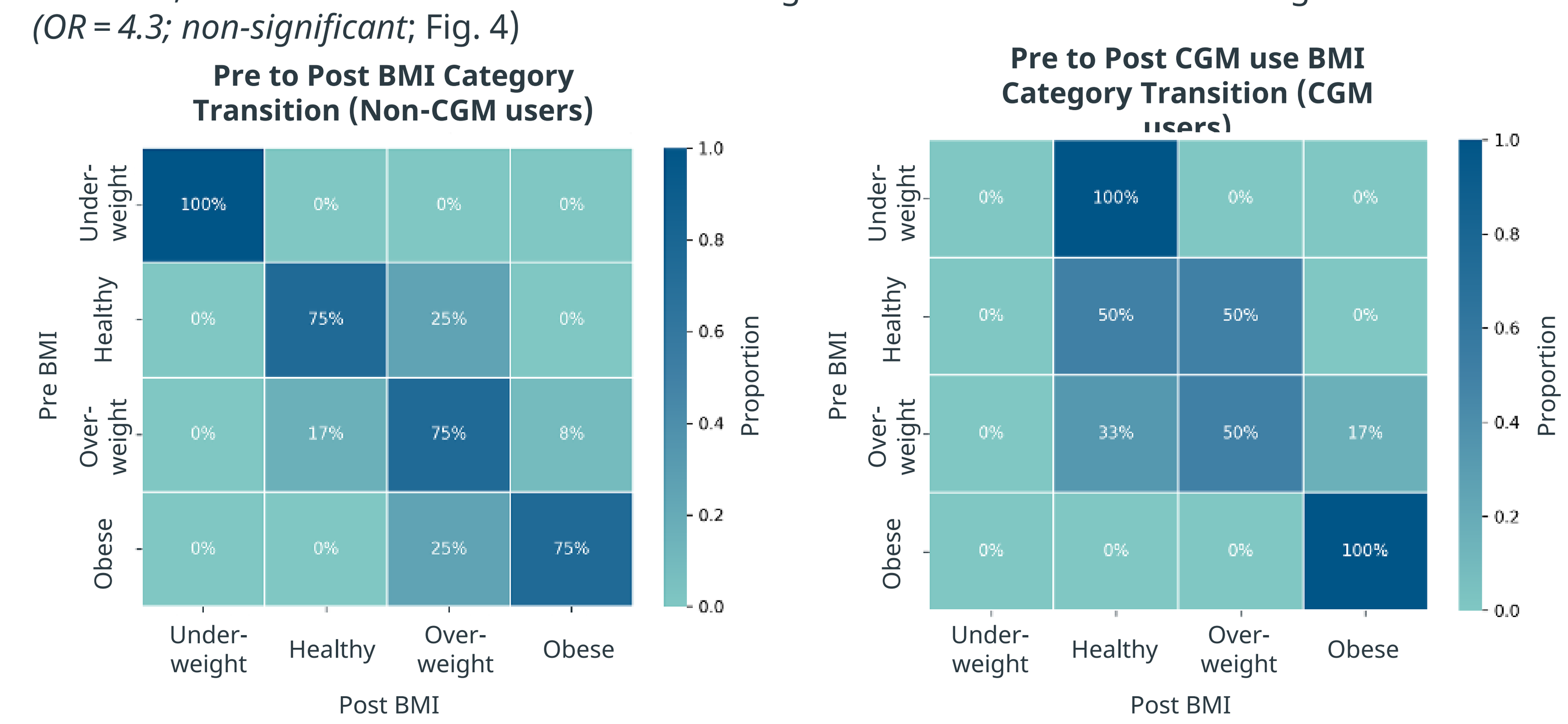

Figure 4. BMI category transitions by CGM use, Heatmap of pre- to post-observational BMI category

Discussion and Conclusions

- This real-world EMR analysis suggests that CGM use may be associated with stabilisation of selected cardiometabolic risk indicators in adults with type 2 diabetes not treated with insulin, most notably a reduced likelihood of systolic blood pressure increase over time
- No statistically significant associations were observed for the outcomes BMI or weight in either population
- While CGMs are viewed as biofeedback tools that support behaviour change[4] and improved glycaemic control[6] and are not therapeutic interventions, the findings align with an expanding role for digital health tools as enablers of self-management through continuous sensing and real-time feedback
- Glycaemic control is relevant across major chronic diseases, including cardiovascular[7], metabolic[8,9], neurodegenerative[10], and cancer-related conditions[11]–suggesting broader implications of CGM use
- In this context, CGMs function as biofeedback sensors within an evolving digital health ecosystem, where continuous data, behavioural insights, and algorithms collectively support healthspan management
- A plausible mechanism underlying the observed findings is the behavioural response to real-time glucose feedback, which has been described in previous studies[12,13]
- The lack of observed effects in individuals without diabetes further suggests that such digitally mediated behavioural responses may be most impactful in metabolically susceptible populations
- Looking ahead, the trajectory of healthspan management lies in the integration of sensors, algorithms, and targeted interventions
- Future research should assess broader metabolic biomarkers, evaluate the durability of behavioural effects, and explore how CGMs may be combined with algorithm-driven decision support and pharmacological therapies – such as GLP-1 receptor agonists – to enable more personalised, preventive, and scalable digital health strategies

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