

DIABETES PATIENTS' REPORTED OUTCOME MEASURES (PROMS) AND CLINICAL OUTCOMES OF THEIR DAILY USE OF INSULIN PUMPS

Susan Kamal,¹ Lisa Simonnet,¹ Alexandra Charlier,¹ Bogdan Catargi,² Dominique Breilh^{*}

¹ Pharmacokinetics and Clinical Pharmacy Laboratory, University of Bordeaux, College of Health Sciences.

Clinical pharmacy training service for health professionals and support for patients with chronic diseases as part of their outpatient care pathways

Coordination of city-hospital link - CHU Bordeaux/ARS Nouvelle-Aquitaine

² Department of Diabetology, Bordeaux University Hospital, School of Medicine, University of Bordeaux

^{*}Corresponding author

Insulin pumps have revolutionized diabetes patients' self-management of their disease. However, the differences in quality of Life (QoL) across different pumps (tethered, patch) and their insulin delivery technique (open, hybrid closed loop) is not yet widely explored.

OBJECTIF : To examine the patient-reported outcomes (PRO) and clinical measures of diabetes management and quality of life (QoL) based on the type of insulin pump and insulin delivery method used.

METHODS

Two surveys collecting PROMs using ICHOM recommendations :

- Survey completed **by health care professionals** : age, sex, diabetes type, glycated hemoglobin level (HbA1c), severe hypoglycemic events (hypo), duration since first diabetes diagnosis, type of insulin pump used and time in range (TIR).
- Survey completed **by patients** : fragility (Fried), medication adherence (Girerd), precariousness (EPICES), well-Being (WHO-5), diabetes distress (DDS) and the QoL and Emotional Burden Assessment Patient Health Questionnaire (PHQ-9).

Descriptive statistics and Analyses performed:

1 Univariate analysis

2 Multivariate regression analysis

3 Clustering analyses (PCA)

RESULTS

1 Descriptive statistics

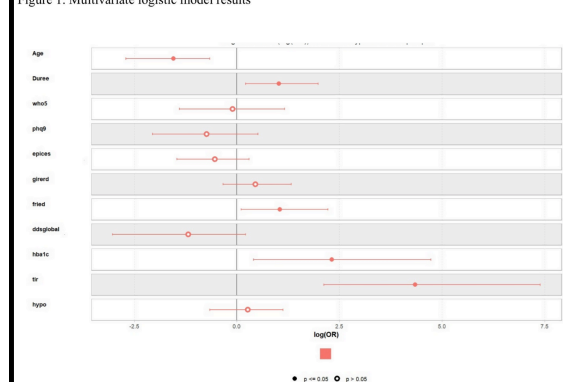
- Age** : mean (SD) **49.4 years** (14.9)
- Diabetes** : type I : **72** (93.5%) type II : **2** (2%)
- WHO-5** : mean (SD) **58.6** (22) : varying levels of well-being.
- PHQ-9** : mean (SD) **6.9** (5.9) : mild depressive symptoms.
- EPICES** : mean (SD) **19.6** (19.4) : moderate levels of socio-economic difficulties.
- HbA1c** : mean (SD) **7.3%** (0.8%) : overall blood glucose control.
- TIR** : mean (SD) **62.2%** (16.7%) (target 70%) : moderate glycemic control.



77 patients : 48 (62%) female

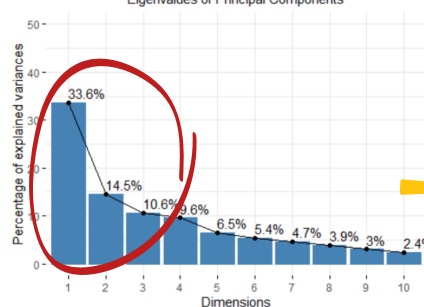


Figure 1: Multivariate logistic model results



2 Principal Component Analysis (PCA)

Eigenvalues of Principal Components

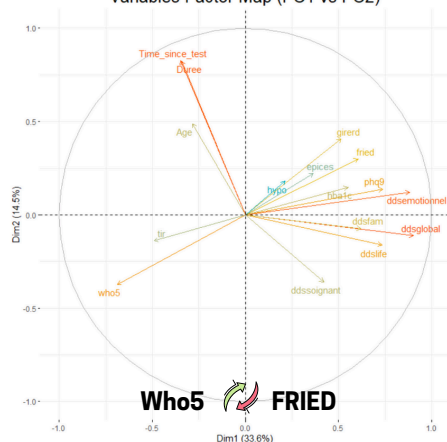


3 components

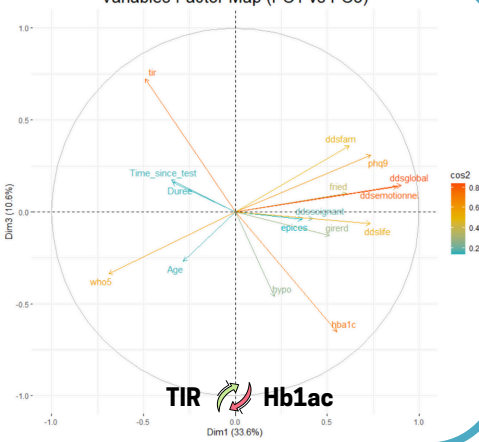
>10%= valuable

cos2 > 0.8 = significant

Variables Factor Map (PC1 vs PC2)



Variables Factor Map (PC1 vs PC3)



3 Clusters analysis

3 clusters :

- 1** (n=36)
- 2** (n=21)
- 3** (n=20)



Cluster 2 and 3

Description of each cluster by quantitative variables with p.value < 0.005

Variable	Mean in category	Overall mean	Girerd	0.47	0.99	lslife	2.60	1.89
character	numeric	numeric	Phq9	3.28	6.88	q9	11.65	6.88
Who5	74.11	58.65	Ddsglobal	1.60	2.10	rerd	1.65	0.99
Tir	69.75	62.24	Ddsemotionnel	1.92	2.76	lsfam	3.10	2.15
Hba1c	7.01	7.35	Duration	36.24	23.57	la1c	7.91	7.35
Ddslife	1.51	1.89	Who5	42.48	58.65	ed	2.85	1.97
Ddsfam	1.49	2.15	Ddsglobal	2.93	2.10	lssoinnant	2.01	1.55
Fried	1.22	1.97	Ddsemotionnel	3.89	2.76	irration	12.65	23.57
							48.02	62.24

CONCLUSION

This study explored different ICHOM recommended PROMS and clinical outcomes of four insulin pumps and two insulin delivery techniques. Several significant clinical and QoL variables were identified across the multivariate and clustering analyses, highlighting the importance of using PROMS to guide future patient-oriented interventions to improve patients' QoL and care.