Glycemic Control, Hypoglycemia Unawareness, and Diabetes-Related Distress in Middle-Old (75 to 85 Years), and Old-Old (>85) before and after Flash Glucose Monitoring in People Living with Diabetes—Association of British Clinical Diabetologist Study

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Introduction

Type 1 diabetes (T1D) is a chronic autoimmune disease that affects individuals of all age groups, including older adults. However, the clinical features and management of T1D in older adults can differ from younger age groups due to various physiological, cognitive, and psychosocial factors.

Therefore, understanding the clinical features and management strategies for T1D in older adults is crucial for providing optimal care to this population.

Furthermore, there is limited research on the impact of intermittently scanned continuous glucose monitoring (isCGM) in older adults with T1D, particularly in different age groups within the older adult population.

Aim

The aim of this study is to evaluate the clinical features of T1D in older adults and assess the impact of isCGM in different age groups, including young-old (65-75 years), middle-old (>75-85 years), and old-old (>85 years) individuals.

Methods

In this observational study, data from the nationwide ABCD audit on FreeStyle Libre, which was initiated in November 2017, was analyzed.

Data was collected through paper forms completed at baseline and follow-up clinic visits and entered in a secure online NHS tool.

Baseline data included patient demographics, history of structured diabetes education, duration of diabetes, use of continuous subcutaneous insulin infusion (CSII), Body Mass Index (BMI), HbA1c values from the previous 12 months, Gold score, Diabetes Distress Screening scale (DDS2), and severe hypoglycemia events, paramedic callouts, and hospital admissions due to hypoglycemia in the previous 12 months.

Follow-up variables included Gold score, HbA1c, DDS2, BMI, severe hypoglycemic events, paramedic callouts, and hospital admissions due to hypoglycemia since the previous clinic visit.

Statistical analysis was conducted using R. The $\chi 2$ test of association was used to compare categorical data, the Mann-Whitney U test for non-parametric continuous data, and the Independent t-test for continuous parametric data.

Results

Table 1: Baseline demographic and clinical characteristics of people with diabetes across young-old, middle-old and old-old populations

	Young Old (N=1208)	Middle-Old (N=401)	Old-Old (N=33)	p value
Duration of Diabetes	36.39 (±1.6)	38.06 (±0.91)	41.6 (±3.27)	0.735
Gender (%Female)	537 (44.5%)	176 (43.9%)	11 (33.3%)	0.445
Ethnicity				0.429
British	1002 (82.9%)	344 (85.8%)	27 (81.8%)	
Indian Pakistani and Bangladeshi	12 (1.0%)	2 (0.5%)	1 (3.0%)	
Others	194 (16.1%)	55 (13.7%)	5 (15.2%)	
Baseline HbA1c	64.62 (±0.4)	65.35 (±0.6)	65.19 (±3.0)	0.643
Baseline DDS2	2.57 (±0.04)	2.63 (±0.07)	2.42 (±0.25)	0.62
Baseline BMI	26.52 (±0.17)	24.98 (±0.30)	24.47 (±0.69)	< 0.001
Gold Score	3.18 (±0.05)	3.54 (±0.10)	4.10 (±0.39)	< 0.001
Insulin pump use	160 (13.2%)	30 (7.5%)	0 (0.0%)	< 0.001

Table 2: Effect of FSL on clinical characteristics of people with diabetes across young-old, middle-old and old-old populations

	Young Old (n=613)			Middle-Old (n=187)			Old-Old (n=15)		
	Baseline	Follow-up	P-value	Baseline	Follow-up	P-value	Baseline	Follow-up	P-value
HbA1c	63.2 (0.519)	60.53 (0.48)	<0.001	64.99 (0.98)	64.01 (0.94)	0.47	63.94 (3.67)	60.24 (2.75)	0.78
DDS2	2.55 (0.057)	1.99 (0.03)	<0.001	2.71 (0.095	2.05 (0.06)	<0.001	2.38 (0.284)	1.76 (0.14)	0.06
Gold score	3.10 (0.082)	2.69 (0.07)	0.002	3.47 (0.154)	2.92 (0.15)	0.01	3.71 (0.507)	3.42 (0.55)	0.7

Conclusion

There were notable variations in baseline BMI, Gold Score, and insulin pump use among older adults living with Type 1 diabetes. isCGM is associated with improved glycaemic control, diabetes-related distress and hypoglycaemia unawareness in older adults with type 1 diabetes.

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