HbA1c outcomes across gender, ethnicity, deprivation and age with hybrid-closed loop in the the Association of British Clinical Diabetologist's (ABCD) audit of the NHS England pilot

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Introduction

In 2021, NHS England launched a pilot scheme to increase access to hybrid-closed loop therapy across 31 adults centres[1]. Adults with a HbA1c≥69mmol/mol who were already using an insulin pump and FreeStyle Libre 2 were invited to take part. Some individuals in the UK and globally may be less likely to use this life-changing technology due to perceptions, often from healthcare providers, that the benefits may be more limited.

The aim of this analysis is to assess HbA1c outcomes across multiple characteristics.

Methods

Data were entered by clinical teams into the secure online tool, from which they were extracted for this analysis. Change in HbA1c in individuals, stratified by age (<40 years, 40-59 years, >60 years), ethnicity, deprivation (Index of multiple deprivation [IMD] decile) and gender in individuals with available baseline and follow-up data at 6-months (3-9 months) are reported. Follow-up HbA1c levels were also compared across groups. Change in HbA1c was corrected for multiple covariates using multiple linear regression analysis in Stata 16.

Results

In total, 520 HCL users were included; median age 40.5 years (IQR 29-51), 66.9% (n=348) were female, and 92.9% were White. Baseline HbA1c was 79.4±9.8mmol/mol with a median follow-up of 5.1 (IQR 3.9-6.6) months.

Figures 1-4 (below) showing change in HbA1c (mmol/mol) from baseline in different age groups (1), genders (2), ethnicity (3) and deprivation groups (4). All difference between groups are non-significant to P<0.05

Fig 1.

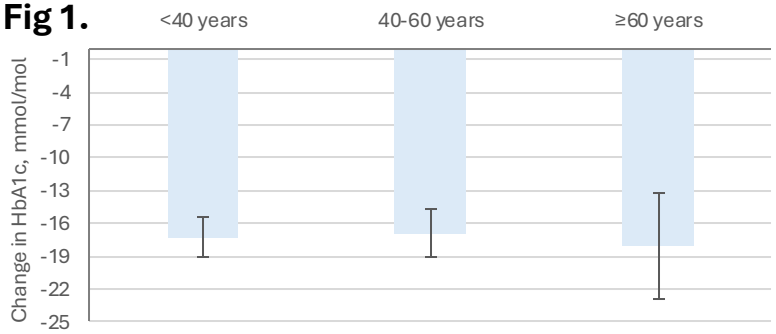


Fig 2.

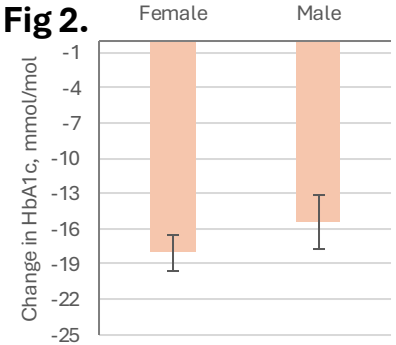


Fig 3.

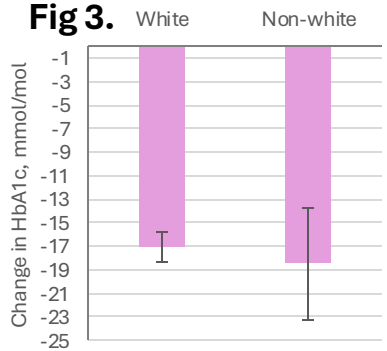
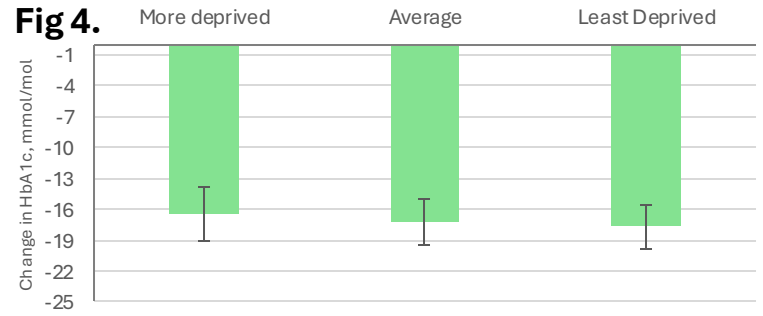


Fig 4.



Results (cont.)

The mean HbA1c reduced to 62.1±9.1mmol/mol (P<0.001). Adjusting for covariates, this was a mean reduction of 18.1mmol/mol (95%CI 16.6, 19.6; P<0.001). No statistically significant differences were noted in the magnitude of HbA1c reduction across gender (P=0.2), age group (P=0.83), ethnicity (P=0.29), or deciles of IMD (P>0.99). Follow-up HbA1c was not statistically significant between genders (P=0.44), age groups (P=0.32), ethnicity (P=0.62) or deciles of IMD (P>0.99).

Discussion

Irrespective of gender, ethnicity, age or socioeconomic status hybrid closed-loop therapy is associated with similar reduction in HbA1c at 6-months. Additionally, there is no significant difference in the HbA1c levels across these groups at follow-up. All individuals with type 1 diabetes and above target HbA1c appear to benefit equally from this technology emphasising further the need to ensure equitable access to hybrid closed-loop therapy during all future roll-outs.

References

1. Crabtree et al, Diabetes Care 2023

Conflict of interests

TSJC has received personal fees from Insulet, Abbott Diabetes Care, Dexcom, Sanofi, Lilly, NovoNordisk.