The impact of sodium-glucose link transporter-2 inhibitors (SGLT2i) on Fib4 score in people with type 2 diabetes: analysis using the Association of British Clinical Diabetologists (ABCD) audit data

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Introduction

Previous analyses of data from the ABCD audit programmes have demonstrated that SGLT2 use is associated with reductions in alanine aminotransferase levels (ALT) at follow-up, and that these reductions are greatest in those with raised levels at baseline[1].

Although ALT has been shown in some studies to be correlated with liver fibrosis or inflammation from fatty infiltration, it is a less than ideal surrogate marker[2]. Other biochemical means of assessing for liver fibrosis include aspartate aminotransferase (AST) to ALT ratios and Fib4 scores[3-4]. The Fib4 score additionally incorporates platelet levels and patient age into the equation used. Those with Fib4 scores >1.45 are deemed to be at risk of fibrosis with Fib4 score; as are those with an AST:ALT>1.

The aim of this analysis was to assess the impact of any SGLT2i on these markers to further explore any potential beneficial effect.

Methods

An analysis was performed using data from all ABCD SGLT2i audit programmes. Those included had sufficient data to calculate Fib4 scores and AST:ALT ratio. Fib4 changes were assessed using paired T-Test. Cochran's Q was used to assess changes in the proportion of patients with Fib4 score >1.45 or AST:ALT>1 at follow-up (i.e. suggesting NAFLD or inflammation). Analyses were performed using Stata 16.

Results

196 datasets had sufficient data for inclusion. The baseline characteristics of the cohort are as displayed in **table 1 (below**).

Over a median follow-up of 1.8 years (IQR 1-2.5) 180 patients had a follow-up Fib4 score. No significant change in absolute Fib4 score was observed (+0.05, 95%CI +0.2, -0.1, P=0.47) across all 3 SGLT2i despite continued ALT reductions of -9.5U/L (P<0.001, 95%CI -6, -11).

The proportion with AST:ALT>1 was not significantly different between baseline and follow-up, but the proportion with Fib4>1.45 was significantly reduced (P=0.048) at follow-up (44/180) compared to baseline (55/180).

These results are displayed in **Figures 2 and 3.**

Fig 1. Table showing the baseline characteristics of those included in this analysis of the ABCD SGLT2i audits

Characteristic	n=196
Age, years ± SD	57.7 ± 10.3
Male, %	63.3
Median diabetes duration, year (IQR)	7.4 (3.9-12.2)
Mean Hba1C, % ± SD	9.05 ± 1.32
mmol/mol ± SD	75.5 ± 14.5
Mean BMI, kg/m2 ± SD	33.9 ± 6.3
Mean weight, kg ± SD	101.9 ± 19.0
Mean eGFR, mL/min/1.73m^2 ± SD	84.9 ± 9.6
Median ALT, U/L	42 (29-60.5)
Median AST, U/L	29 (20-41.5)
Number on each SGLT2i, n (%)	
Empagliflozin	63 (32.1%)
Dapagliflozin	58 (29.6%)
Canagliflozin	75 (38.3%)

BMI, body mass index; eGFR, estimated glomerular filtration rate; IQR, interquartile range; SD, standard deviation

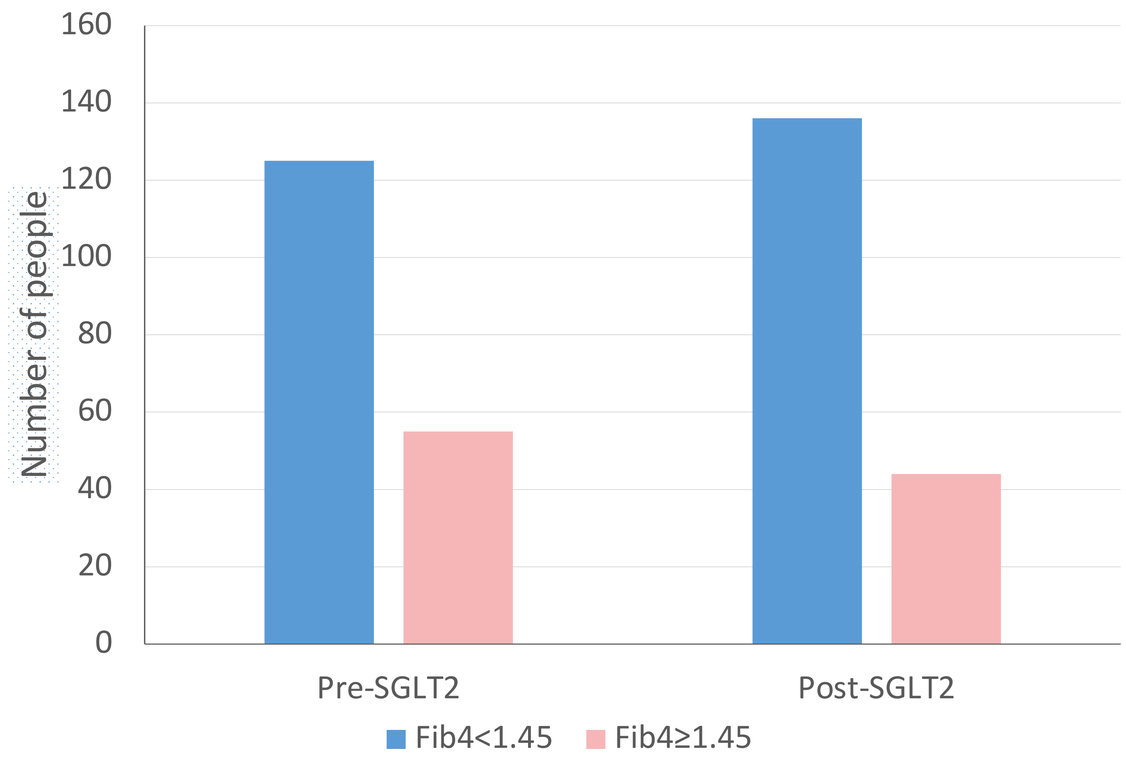
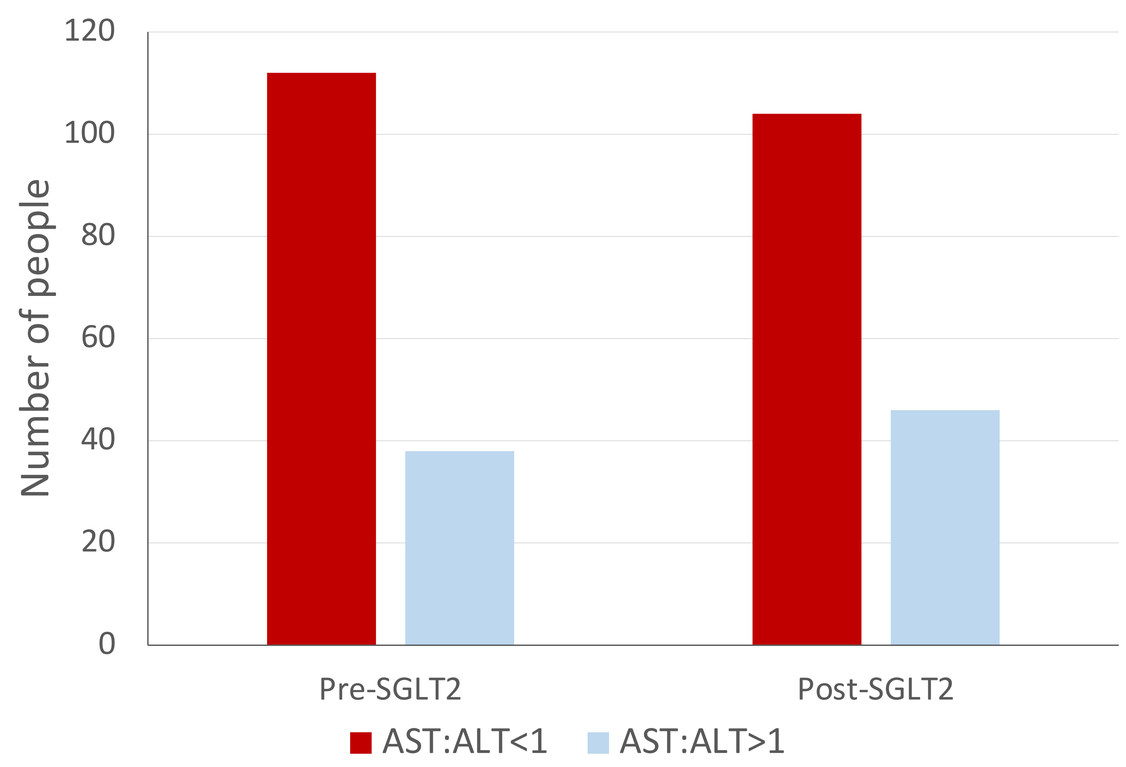


Figure 2. (above) Bar chart showing the numbers of people with Fib4<1.45 vs ≥ 1.45 before and after SGLT2 initiation. P=0.048

Figure 3. (below) Bar chart showing the numbers of people with AST:ALT<1. vs ≥1 before and after SGLT2 initiation. P=0.24



Conclusion

SGLT2i use was not associated with reductions in absolute Fib4 levels but did significantly reduce the proportion of people with a score >1.45 at follow-up.

ALT reductions were still observed, though no change in AST:ALT ratio was noted. SGLT2i use appears to be associated with reductions in markers of liver fibrosis and therefore may have a protective effect on NAFLD.

Re-assessment is planned once further data has been received in coming months.

References

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