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## Background and Objectives

- Diabetes-related distress (DRD) is increasingly being recognized in patients with Type 1 diabetes and is an important determinant of poor glycaemic control and complications in people living with Type 1 diabetes
- We and others have recently shown significant improvement in DRD with the use of Freestyle Libre (FSL) however there are no data looking at factors affecting improvement in DRD with the use of FSL. It is crucial to identify the risk factors associated with DRD and the factors which influence the reduction in DRD with use of FSL
- The objective of this study was to identify factors associated with improvement in DDS following the use of FSL.

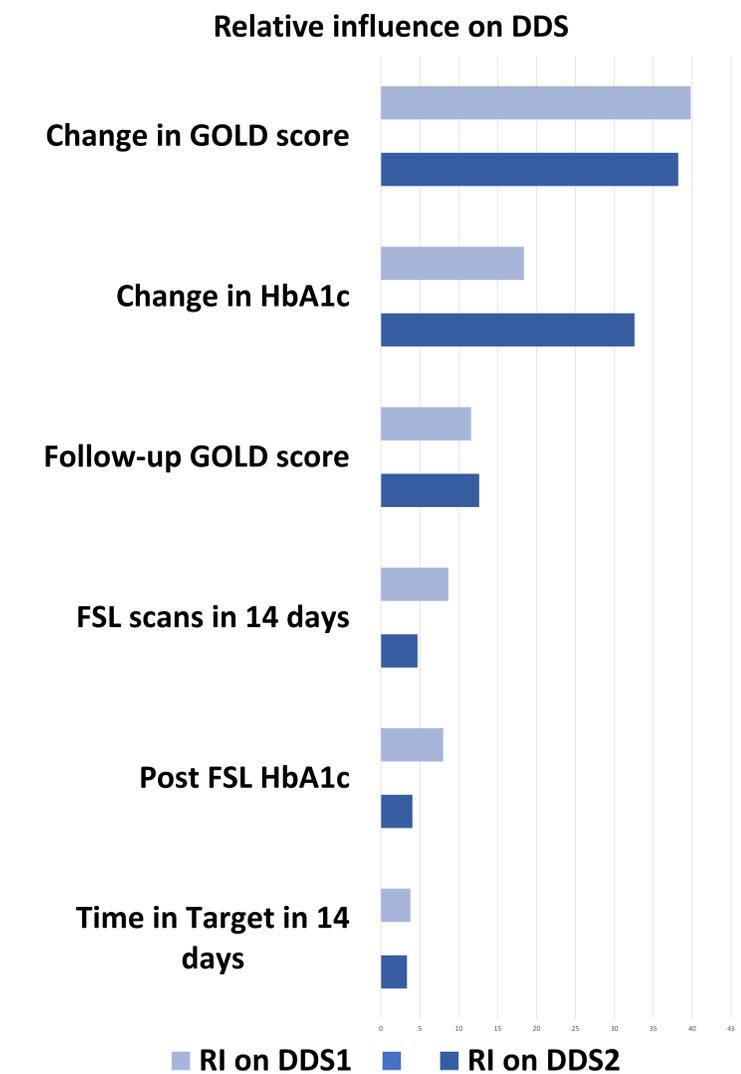
## Methods

The study was performed using baseline data from the ABCD nationwide FreeStyle Libre audit. We collected diabetes-related distress scores at baseline with two items diabetes-related distress score (DDS) and follow up. An average item score of  $\geq 3$  (moderate distress) discriminated high from low-distressed subgroups. We used an unsupervised gradient boosting machine learning model (GBM) to identify the relative influence of baseline parameters on two components of DDS.

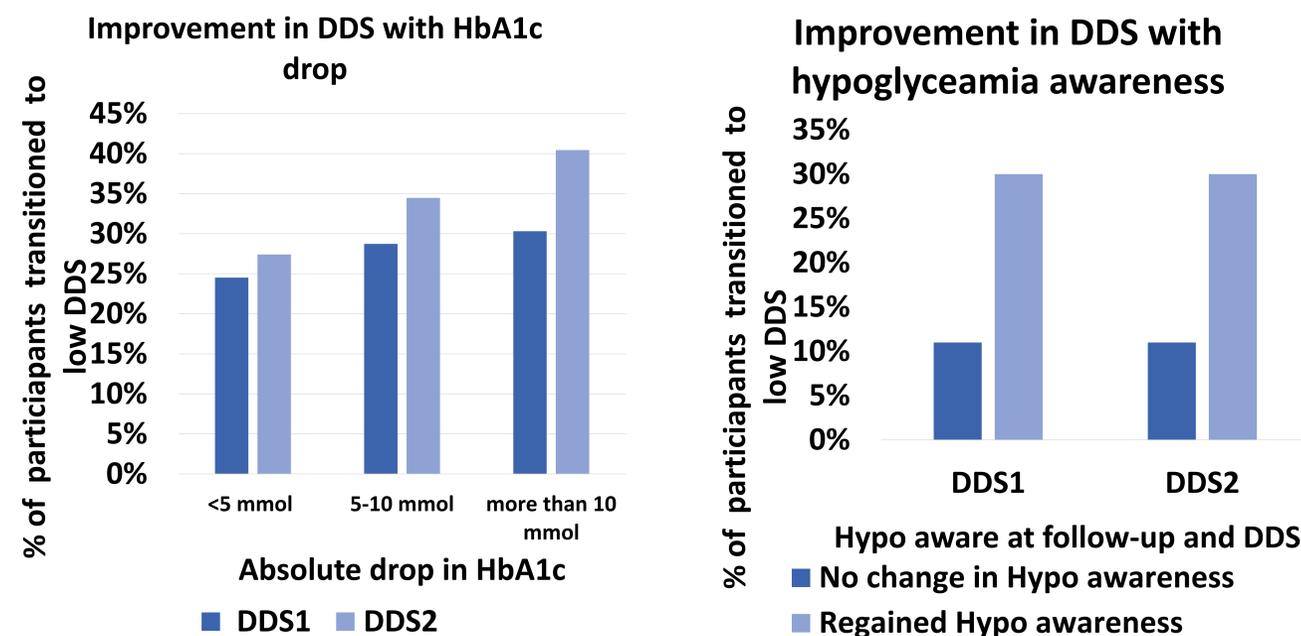
## Results

	Improvement in DDS following FSL use (878)	No change in DDS with FSL use (3559)	P-value
Age (years)	47.3(15.3)	46.6(15.2)	0.22
Sex, females	52.90%	46.80%	0.001
Baseline BMI (kg/m <sup>2</sup> )	27.1 (5.3)	27.1(5.1)	0.96
Duration of diabetes (years)	23.9 (14.9)	23.8 (14.8)	0.9
pre-FSL HbA1c (mmol/mol)	67.4 (15.4)	67.6 (16.1)	0.73
Baseline Gold score	2.69 (1.7)	2.45 (1.6)	0.0001
post FSL HbA1c (mmol/mol)	61.8 (12.2)	63.3 (14.5)	0.005
Post FSL Gold score	2.13 (1.3)	2.35 (1.5)	0.0001
Change in HbA1c following FSL	5.61 (11)	4.51(10.4)	0.01
Change in GOLD following FSL	0.53 (1.5)	0.23 (1.4)	<0.0001
Average number of FSL Scan in 14 days	12.83 (13.8)	12.12(12.4)	0.22

## Top 6 variables in the GBM for improvement in DDS with FSL use



## Effect of change HbA1c and GOLD score on follow-up DDS



## Conclusion

Improvement in hypoglycaemia awareness .improvement with glycaemic control and engagement with FSL are associated with improved DRD in patients with Type 1 Diabetes