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Evaluation of the diabetes education app

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Introduction
Structured education is an integral part of type one diabetes care for children and young people and their families, delivered at diagnosis. There is currently no validated curriculum or outcome measures of diabetes education in the UK. We evaluated the outcome of using the diabetes education app (deapp), using flipped learning against historical practice, to determine if it conferred any benefit in our single centre.

Methods
Two cohorts of patients were identified via the Diamond database, diagnosed either pre or post deapp. Consenting individuals completed four online questionnaires: the hypoglycaemia awareness (Clarke) questionnaire; fear of hypoglycaemia questionnaire; problems associated in diabetes 20 (PAID-20) questionnaire and; assessment of understanding. Eighteen months of HbA1c data was collected for each patient from diagnosis and length of stay using the hospital database. Staff also completed questionnaires on their experiences of using deapp.

Results
Fifty patients were identified, with 32 consenting to take part (n=17 pre-deapp, n= 15 post-deapp). Mean hbA1c over 18 months from diagnosis showed a percentage fall of 52% pre-deapp vs 48% post-deapp (mean hbA1c pre-deapp 109 mmol/l fell to 53 mmol/l vs 101 mmol/l post-deapp fell to 52 mmol/l). Mean clarke scores were 0.3 (pre-deapp) and 1.4 (post-deapp). Mean fear of hypoglycaemia scores were 8 (predeapp) and 10 (post-deapp). Mean PAID-20 scores were 16 (pre-deapp) and 22 (postdeapp). Assessment of understanding of diabetes showed a mean score of 35 (60% pre-deapp) and 39 (67% post-deapp). Mean length of stay was 3 days (pre-deapp) and 2 days (post-deapp).

Conclusion
There was equivalent reduction of hba1c to target in both groups. There was no difference in either hypoglycaemia awareness or fear of hypoglycaemia. There were higher PAID-20 scores in the post-deapp group. Staff reported better retention of knowledge and improved engagement in the post-deapp group. There was a reduction in admission time by one day in the deapp group. The findings show equivalence of glycaemic control up to 18 months in the two groups. Deapp appears to reduce bed-stay and demonstrated better knowledge retention as assessed by the two objective measures used. These findings support deapp as a flexible form of education, especially during a pandemic.