**Psychosocial impacts of cessation of meal announcement in a randomised controlled trial of a fully closed-loop system**

**Aims:**

Users of automated insulin delivery systems may still experience a significant diabetes burden, in part due to a recommendation to carbohydrate count and deliver manual insulin boluses pre-meals. The CLOSE IT (Closed Loop Open SourcE In Type 1 diabetes) randomised controlled trial demonstrated glycaemic efficacy of the oref algorithm (as used in AndroidAPS) when used as ‘fully closed-loop’ (FCL) (without meal announcement) compared with use as a hybrid closed loop (HCL) system. This sub-study aimed to explore psychosocial impacts of cessation of meal announcement.

**Methods:**

All 73 participants in the CLOSE IT trial completed standardised questionnaires at pre-specified time-points: INsulin dosing Systems: Perceptions, Ideas, Reflections, and Expectations (INSPIRE); 5-level EQ-5D (EQ-5D-5L); and system usability score (SUS). Responses were scored and compared between the FCL and HCL arms. Ten FCL arm participants completed a qualitative interview at study completion. Verbatim transcripts were prepared and descriptive qualitative thematic analysis used.

**Results:**

Mean (± standard deviation) SUS score was 85±12 in the FCL and 75±15 in the HCL groups (difference 9.1, 95% confidence interval 2.8 to 15). Two items in the INSPIRE questionnaire showed significant between group differences, relating to perceptions of hyperglycaemia (favouring HCL) and ease of diabetes management in social situations (favouring FCL). No significant differences were identified in responses to the EQ-5D-5L questionnaire. In qualitative interviews, FCL users identified a reduced cognitive burden of diabetes and greater flexibility around meals, however also commented on perceived weight gain and higher postprandial glucose levels.

**Conclusion:**

Use of an FCL system when compared to an HCL system was associated with multiple user-identified psychosocial benefits, including reduced cognitive burden, greater mealtime flexibility, and increased ease of use.