

00104 Do Provision of Carbohydrate Counting Workshop and Automated Bolus Calculator Improved Glycemic Outcome in Adolescents With Type 1 Diabetes

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Aims: New technology using Automated Bolus Calculator (ABC) glucometer provides capability to calculate insulin dosage based on carbohydrate (CHO) intake and blood glucose reading. We hypothesized that providing knowledge about carbohydrate counting by dietician and using ABC glucometer may help achieve better glycaemic control.

Methodology: Patients are randomized into 2 groups to evaluate the effectiveness of CHO counting education to be used with ABC glucometer as compared to the use of conventional glucometer. All participants receive questionnaire on CHO counting at pre & post CHO counting education at week 0 and 12. Additionally, data such as HbA_{1c} and weekly average number of blood glucose levels <4mmol/L (Hypoglycaemia) and >15mmol/L (Hyperglycaemia) were collected at week 0 and 12 weeks. Lastly, utilization of CHO counting skills was collected.

Result: Out of 40 adolescents (20 in each group) recruited, completed data from 13 in study group (G₁) & 16 in control group (G₂) were analysed. There is a significant improvement in HbA_{1c} in G₁ vs. G₂ at week 12 post intervention, ($9.40\% \pm 2.19$ & $8.77\% \pm 1.68$, $p=0.028$) vs. ($8.73\% \pm 1.82$ & $8.53\% \pm 1.47$, $p=0.282$).

The hyperglycemic episodes did not change significantly in both groups, G₁(4.75 ± 4.0 & 4.08 ± 4.17 , $p=0.572$) vs. Group₂: (6.12 ± 5.30 , 4.81 ± 4.21 , $p=0.263$). Number of hypoglycaemia episodes were reduced in both groups, G₁: (1.77 ± 1.79 & 0.77 ± 0.72 , $p=0.031$) & G₂: (2.06 ± 1.53 & 1.0 ± 1.55 , $p=0.049$). No improvement in CHO counting knowledge quiz score in both groups, G₁: ($41.76\% \pm 25.72$ & $36.26\% \pm 12.53$, $p=0.391$), G₂: ($34.82\% \pm 22.11$ & 31.25% , $p=0.572$).

Conclusion: Adolescents with Type 1 diabetes have improved HbA_{1c} and hypoglycaemia episodes after using ABC glucometer and attended CHO count education.

Emphasis on regular blood testing and CHO counting facilitated by ABC provides opportunity to optimize glycemic trend.