Having a visual reference, "Carbs & Cals", makes insulin pump user's carbohydrate estimates more accurate

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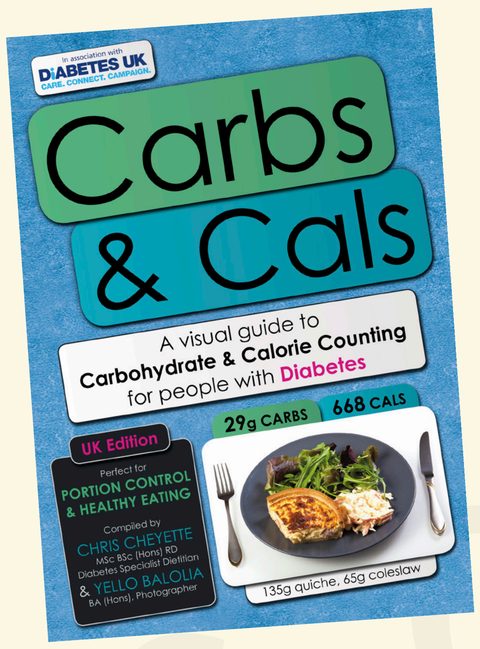
AIMS

To measure the accuracy of carbohydrate estimates by adult insulin pump users (or their partner if the main carbohydrate counter in the household) and then to see if using "Carbs & Cals" improves accuracy.

BACKGROUND

One method of calculating the insulin required for a meal is based on a ratio of units of insulin to grams of carbohydrate. An over estimate of only 10g carbohydrate can result in hypoglycaemia. All Bradford's insulin pump users (or a partner) are taught to carbohydrate count using the gram method (as opposed to carbohydrate portions or exchanges) and an inability to carbohydrate count precludes transfer to pump therapy. "Carbs & Cals" provides pictures of foods in different portion sizes labelled with the carbohydrate content.

We hold an annual pump patient meeting and as part of this offer workshops. We took the opportunity in May 2011 to audit the carbohydrate counting accuracy of the attendees.



METHOD

We asked 36 insulin pump users and 2 carers to a carbohydrate counting workshop. This sample represented about 25% of Bradford's pump users.

12 meals/snacks were prepared and individuals were asked to estimate the amount of carbohydrate in grams on each plate. Answers were recorded on a data collection sheet. Once the estimates were made participants were given a copy of "Carbs & Cals" and asked to reassess their estimate.

Food Item	Carbohydrate Content (g)	% of estimates within 10g	% of estimates using "Carbs & Cals" within 10g
1 slice cheesecake	23	73.3	25
Banana	25	78.9	100
Salmon, new potatoes and salad	32	47.3	84.3
Bowl tomato soup and a roll	34	52.7	92.6
Slice of pizza on a plate	35	65.8	44.4
2 Weetabix and milk	35	79	92.6
Pastie	53	44.8	54.6
Pot Noodle (in packaging)	58	84.2	Not Listed
Toast, jam and glass of orange juice	62	47.4	34.6
Rice and chilli plated	70	50	70.4
Pie peas and chips	86	23.7	47.1
Large bowl plain pasta	108	10.5	33.3

RESULTS

The possible number of estimates was 456 (38 participants and 12 meals to estimate).

Participants made 453 estimates unaided but managed only 265 with "Carbs & Cals", this was largely due to time restraints at the event and also because one of the food items – the pot noodle is not listed in Carbs & Cals.

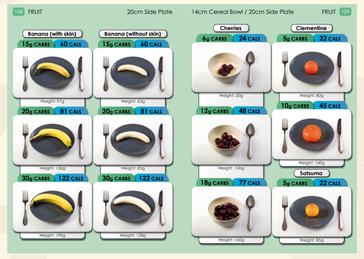
55% of participants' estimates were within 10g, 65% were within 15g. Using "Carbs & Cals" improved accuracy to 63% within 10g and 72% to within 15g. These figures were similar to those found by Smart et al in a study of families who carbohydrate counted for their children with type 1 diabetes.

The largest carbohydrate meals seemed to be the hardest to get right. The presence of the food label helped (pot noodle) but even then some subjects still made mistakes.

CONCLUSION

"Carbs & Cals" a visual resource improves insulin pump patients estimates of carbohydrate in meals.

We would like to continue to improve our patient's estimation skills and are looking at our teaching methods to enhance this.



References

1. Cheyette and Balolia "Carbs & Cals: A visual guide to carbohydrate and calorie counting for people with Diabetes" 4 Edition 2010
2. Smart et al "Can children with Type 1 diabetes and their caregivers estimate the carbohydrate content of meals and snacks?" 2010 Diabetic Medicine 27,348-353

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