



Predicting outcomes in the Dose Adjustment For Normal Eating (DAFNE) Trial

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The DAFNE Trial is a collaboration between:



1) Background

In a group of 138 adults with Type 1 diabetes in the UK, DAFNE training in flexible intensive insulin therapy significantly reduced the negative impact of diabetes on quality of life (QoL) and improved blood glucose (BG) control without significantly increasing severe hypoglycaemia or body mass index (BMI)¹.

Despite positive results overall, it was evident that there was wide variation in some outcomes [Table 1], particularly body weight. DAFNE has the potential to improve a range of outcomes but it is important that improvements in particular outcomes are not achieved at the expense of others.

Analyses were conducted to predict who would benefit most from the generally highly successful DAFNE training and who might experience undesirable effects.

2) Methods

Questionnaires were completed at baseline and 6-months post-training:

- Demographic
- Biomedical
- ADDQoL² (measure of the impact of diabetes on QoL)
- DTSQ³ (Diabetes Treatment Satisfaction Questionnaire) - extended version
- W-BQ28⁴ (measure of generic and diabetes-specific well-being)
- ADDLoC⁵ (measure of diabetes-specific locus of control)

Multiple regression was used to predict change in outcomes (6 months post-DAFNE) for 125 (90.6%) participants using baseline data.

Table 1: Change in outcomes 6 months post-training

Change score:	N	mean	SD	median	min.	max.
ADDQoL AWI*	123	0.56	1.14	0.39	-2.94	7.38
HbA1c (%)**	125	-0.84	1.12	-0.80	-4.00	1.50
Weight (kg)	125	0.53	2.77	0.40	-5.70	8.00

* Average Weighted Impact of diabetes on QoL

** Haemoglobin A1c = average blood glucose over approx. 2 months

Table 2: Prediction of improvement in ADDQoL AWI scores

Predictor	B	F
'Freedom to eat as I wish' (ADDQoL item 18)	-0.033	16.3****
'Treatment Satisfaction' (DTSQ total score)	-0.096	5.3*

R²=0.210 (Adjusted R²=0.191)

* p<0.05, **** p<0.0001

Table 3: Prediction of improvement in blood glucose levels (HbA1c)

Predictor	B	F
HbA1c	-0.373	20.8****
'Perceived frequency of hypoglycaemia' (DTSQ item 3)	0.166	5.0*
'Expectations' of DAFNE (immediately following course)	-0.012	4.8*
BMI	-0.037	4.7*

R²=0.301 (Adjusted R²=0.276)

* p<0.05, **** p<0.0001

Table 4: Prediction of improvement in body mass index (BMI)

Predictor	B	F
'Freedom to eat as I wish' (ADDQoL item 18)	0.103	10.0**
Training centre = Kings	0.487	6.6**
= Sheffield	-0.285	
= Northumbria	0.0 ^a	
'Satisfaction with insulin' (Extended DTSQ subscale)	0.031	4.1*

R²=0.301 (Adjusted R²=0.276)

* p<0.05, **** p<0.0001

^a parameter set to zero because it is redundant

3) Results & Discussion

Improvement in QoL [Table 2] was predicted by greater dietary restriction at baseline and lower treatment satisfaction.

Improvement in HbA1c [Table 3] was predicted by higher BG levels and fewer perceived hypoglycaemic episodes at baseline. Expectations (perhaps reflecting greater optimism or determination) were also important as was higher BMI.

Predicting improvement in BMI [Table 4] was more complex. Improvement was predicted most reliably by greater negative impact of diabetes on dietary freedom at baseline. This indicates that those who perceived least dietary freedom prior to DAFNE put on most weight post-DAFNE. The influence of training centre will have involved messages (e.g. healthy eating) conveyed by Educators before and during DAFNE. Finally, those who gained weight reported less satisfaction with the effectiveness, flexibility and convenience of insulin at baseline.

4) Conclusions

Final regression models predicted up to 30% of the variance in outcomes. Lifting dietary restrictions had benefits for QoL but also contributed to the prediction of weight gain. As expected, those with greatest improvement in BG levels were those with higher BG levels and fewer hypoglycaemic episodes at baseline; they also had greater expectations of DAFNE.

While DAFNE was successful overall, outcomes are likely to be maximised for individuals if their expectations and personal goals are considered by DAFNE Educators, who also warn participants about the risks of unwanted outcomes.

References

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