

# Weight management in people with insulin-treated diabetes: Dietetic goals

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## Article points

1. Patient choice, experience and quality of life matter to commissioners.
2. Qualitative dietetic outcome measures are generally poorly reported by clinicians in routine practice.
3. For long-term conditions, the addition of routine measures for patient experience, self-management and quality of life would capture this missing qualitative evidence.

## Key words

- Dietetic outcomes
- Insulin treatment
- Weight management

## Author

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**This article reports on a retrospective audit of electronic patient records, which was conducted to explore dietetic outcomes in people who completed a community diabetes weight management intervention. The author presents the findings from the audit and makes the case that introducing psychometrically robust measures for quality of life and self-management into routine practice would provide the additional evidence commissioners need to support diabetes weight management. She also argues that – alongside determining core outcomes – standardising the language used and the structure of dietetic records is the next challenge for dietitians.**

The British Dietetic Association (BDA) “Model for Dietetic Outcomes” sought to engage dietitians in determining core dietetic outcomes for use in routine clinical practice (BDA, 2011). It proposed that dietetic outcome measures should fall within six domains: physical, biochemical, behaviour change, symptom change, patient-focused and psychological.

The Health and Social Care Act promotes both clinically led commissioning and patient choice of services (Department of Health, 2012). To support this, NHS England (2012) has made an Outcomes Indicator Set available to Clinical Commissioning Groups and patients. Indicators are predominantly derived from the NHS Outcomes Framework and NICE's Quality Standards. Of particular relevance to the context of dietetics in people with diabetes are the indicators which seek to influence: health-related quality of life for people with long-term conditions; and patient experience.

In general, weight management should be the primary goal of nutritional strategies in people with type 2 diabetes who are overweight or obese (Dyson et al, 2011). However, weight loss

in people with type 2 diabetes has been shown to be very difficult to achieve (Pi-Sunyer, 2005). Moderate intentional weight loss of around 5 kg or 5% in overweight and obese adults with diabetes is associated with lower all-cause mortality (SIGN, 2010). In addition, weight loss of around 5 kg in obese people with type 2 diabetes is associated with a reduction in HbA<sub>1c</sub> of around 3 mmol/mol (0.3%) at 12 months (SIGN, 2010).

This article reports on a retrospective audit of electronic patient records, which was conducted to explore dietetic outcomes in people who completed a community diabetes weight management intervention run as part of the Nutrition and Dietetic Services at Bradford Teaching Hospitals NHS Foundation Trust.

## The weight management intervention

Weight management clinics for people with insulin-treated diabetes are run by the diabetes specialist dietitians, in partnership with diabetes specialist nurses, and with input from the language support workers. Individuals are initially offered four one-to-one appointments. Time between appointments is determined by the person with diabetes. The dietetic

consultation seeks to identify the individual's desired outcome or outcomes in relation to diabetes weight management and in turn to agree and review goals to support progress. A summary of each appointment is recorded on an electronic patient record system (SystemOne).

## Aim

The aim of the study was to identify and track the intermediate goals arising out of the dietetic care plans that fall under the behaviour change and symptom change BDA domains, as well as investigating physical and biochemical outcomes and exploring psychological and patient-focused factors.

## Methods

### Design and participants

The study was a retrospective audit. Dietetic entries from the electronic patient record system were reviewed for people entering the service between October 2010 and September 2011 ( $n=60$ ). Individuals who attended two or more appointments were included ( $n=42$ ).

### Data collection and analysis

Data adjudged to fall under the physical, biochemical, behaviour change and symptom change BDA domains were extracted from the electronic patient records, where available. HbA<sub>1c</sub> values (which are recorded on SystemOne as part of routine clinical practice) were used if the result was taken within 3 months of the initial or last contact with this diabetes weight management service.

With the aim of also exploring the psychological and patient-focused domains, a questionnaire adapted from a validated patient-reported outcome measures (PROMs) survey was sent retrospectively to 30\* individuals. A franked envelope was included for ease of return.

\*A decision was taken mid-way through the process to explore psychological and patient-focused domains using an adapted PROMs survey. Individuals ( $n=30$ ) completing the programme during a 6-month period (March to August inclusive) were mailshot. It was not deemed feasible to ask individuals to comment on a programme they had completed more than 6 months earlier.

**Table 1. Characteristics of the audit sample ( $n=42$ ).**

Characteristic	Details
Sex	52% female; 48% male
Age, years	Mean, 59.2 years (SD, 8.4 years)
Diabetes type	95% type 2 diabetes; 5% type 1 diabetes
Requirement for interpreter	50% yes; 50% no
Background	52% Pakistani; 40% white; 8% other
Starting BMI	Mean, 37.4 kg/m <sup>2</sup> (SD, 6.3 kg/m <sup>2</sup> )

SD=standard deviation.

Data on weight change were analysed using Microsoft® Excel® (Microsoft Corporation, Redmond, WA, USA). Statistical analysis was performed by the author using the Student's *t*-test.

## Results

Characteristics of the audit sample are summarised in *Table 1*. Individuals attended a mean of 3.9 appointments (standard deviation [SD], 0.8 appointments). The mean intervention duration was 16 weeks (SD, 7 weeks). Eight out of 30 individuals returned PROMs.

### Physical and biochemical domains

Data for these domains are presented in *Table 2*. To explore if there could be some association

**Table 2. Audit data for physical and biochemical domains.**

Characteristic	Details	P-value
<b>WHOLE SAMPLE</b>		
Weight	Pre-intervention: mean, 105.0 kg (SD, 19.2 kg) Post-intervention: mean, 103.6 kg (SD, 19.7 kg)	0.003 for difference
Any weight loss, post-intervention*	<p>2% remained same</p> <p>64% yes      33% no</p>	
Weight loss ≥5%, post-intervention	<p>14% yes      86% no</p>	
HbA <sub>1c</sub> level	Pre-intervention: mean, 73 mmol/mol (8.8%) Post-intervention: mean, 72 mmol/mol (8.7%)	0.46 for difference
<b>SUB-GROUP OF PEOPLE WHO LOST WEIGHT (OR WITH NO CHANGE)</b>		
Mean BMI change	1 kg/m <sup>2</sup>	<0.001
Mean HbA <sub>1c</sub> change	3 mmol/mol (0.3%)*	0.34

SD=standard deviation.

\*Does not sum to 100% owing to rounding. †Among the individuals whose weight loss was ≥5%, HbA<sub>1c</sub> improved by ≥6 mmol/mol (0.5%) in all but one case. In the individual whose HbA<sub>1c</sub> did not improve by this amount (but, in fact, deteriorated from 73 to 102 mmol/mol [8.8% to 11.5%]), it was felt that weight loss was likely to have been attributable to worsening glycaemic control rather than through behaviour or symptom change.

**Table 3. Progress towards dietetic intermediate goals under the behaviour and symptom change domains.**

Goal	Number agreeing goal	Achievement*			Unknown
		Achieved	Partially achieved	Not achieved	
Restrictive eating	42	67%	26%	7%	0%
Regular physical activity	36	58%	33%	9%	0%
Reduced fat	18	33%	11%	39%	17%
Healthier diet	10	40%	40%	10%	10%
Carbohydrate awareness	24	58%	8%	21%	13%
Limit alcohol	1	0%	0%	100%	0%
Blood glucose monitoring	15	67%	20%	13%	0%
Treat hypoglycaemia	10	60%	10%	10%	20%
Medication change	7	100%	0%	0%	0%
Rotate injection site	3	100%	0%	0%	0%
<b>TOTALS</b>	<b>166</b>	<b>60%</b>	<b>21%</b>	<b>14%</b>	<b>5%</b>

\*Line length is proportional to percentage. Any proportion splits not summing to 100% is on account of rounding.

between weight loss and engagement with the service, the mean number of appointments attended was calculated for individuals who lost weight (or with no change) and for those experiencing weight gain. The respective values were 4.0 (SD, 0.9) and 3.6 (SD, 0.5), hinting at a relationship between greater engagement with the service and weight loss, although one that was not statistically significant ( $P=0.08$ ).

**Behaviour and symptom change domains**

Ten dietetic intermediate goals under the BDA behaviour and symptom change domains were identified. Data for these are summarised in *Table 3*. The mean number of goals per person during the intervention was 4.

Individuals who lost weight (or with no change) were found to have agreed more goals compared with those who experienced weight gain (mean, 4.2 versus 3.6;  $P=0.18$ ). Those in the former group also demonstrated greater progress towards agreed goals (62% versus 54%;  $P=0.07$ ).

**Psychological and patient-focused domains**

Owing to the low number of responses, PROMs data are not presented in detail here, but it is worth noting that the surveys returned indicated that individuals felt at ease and that they were

allowed to tell their story and express their concerns, and had things explained clearly and their questions answered fully. In addition, for each statement in the PROMs survey relating to the importance of having a patient-centred consultation, at least six of the eight respondents indicated that they “agreed” or “strongly agreed”.

**Discussion**

This audit identified and tracked 10 dietetic goals, in addition to routine physical and biochemical outcomes. Eighty-one per cent of the goals were achieved or partially achieved for the behaviour and symptom change domains.

The most commonly agreed goals were restrictive eating, regular physical activity and carbohydrate awareness. Individuals who lost weight (or with no change) showed a trend towards agreeing more goals on average and achieving greater success in the achievement of those goals compared with those who did not lose weight.

These findings contribute to demonstrating how dietetic care plans might impact on goals within the behaviour and symptom change domains, with the goals themselves being relevant to diet- and diabetes-related aspects of care as well as self-management skills. This goes some way to capturing the dietitian’s contribution to the nutritional and health status of individuals.

Perhaps the most important elements of effective self-management are collaboration and empowerment. “Feeling supported to manage their condition” has been identified as one of the outcomes mattering most to people with long-term conditions (Department of Health, 2011). There was a good level of agreement with the statements in PROMs that related to the importance of having a patient-centred consultation (although, as already acknowledged, the response numbers were low). Such an outcome may also be used to provide evidence of the positive impact of seeing a dietitian.

Finally, it is worth noting that in addition to weight management, other benefits from an intervention like that described in this article may with time be realised for people with diabetes. Self-management skills enable

individuals to take control of their diabetes (Anderson and Funnell, 2005), while diet and lifestyle changes can positively affect lipids, blood pressure, cardiovascular events, mortality and quality of life (Colberg et al, 2010).

### Limitations

The study design was a retrospective audit, and as such it is not possible to make inferences about causes and effects. For that, a randomised controlled trial would be necessary. The relatively small sample size somewhat hampered the statistical power of the analysis to explore potential associations, particularly when looking at the subgroup of people who lost weight, as opposed to the full sample. In addition, the evidence of progress towards agreed goals was only as good as the documentation and relied on follow-up comments relating to the plans set. The BDA now recommends that dietetic services use the Process for Nutrition and Dietetic Practice and the International Dietetics and Nutrition Terminology as the basis of record systems (British Dietetic Association, 2012; Academy of Nutrition and Dietetics, 2013), which may benefit similar studies in the future.

### Conclusion

Under the Clinical Commissioning Group structure of healthcare delivery, care providers are increasingly required to demonstrate that they deliver an effective, high-quality service. Dietitians often provide their beneficial effects as part of a multidisciplinary team. Identifying which interventions positively benefit patient care and the unique contribution of each clinician is not straightforward. While acknowledging the inherent challenges, this audit provides an important piece of the puzzle in illustrating goals that can arise from dietetic consultations held during weight management clinics, and presenting a real-world example profile of achievement rates among people with insulin-treated diabetes (predominantly type 2 diabetes in this audit).

Quantitative physical and biochemical outcomes such as weight and HbA<sub>1c</sub> changes will continue to provide strong evidence of clinical effectiveness, and it was important

for these to be incorporated in the analysis. However, qualitative outcomes including an increase in diet- and diabetes-related knowledge, self-efficacy, quality of life and overall experience will matter more to many people with diabetes.

Moving forward, tools which measure these qualitative outcomes easily in routine clinical practice would help to provide the missing evidence that dietitians working in long-term conditions need. In this regard, the attempt to collect PROMs data has provided a useful learning experience. In addition, exploring simpler ways of electronic reporting on progress towards goals that would obviate the need for a manual trawl through free text in records would be of benefit.

In any drive to prove an individual profession's worth, we should not lose sight of the patient. ■

***“In any drive to prove an individual profession's worth, we should not lose sight of the patient.”***

Academy of Nutrition and Dietetics (2013) *International Dietetics and Nutrition Terminology (IDNT) Reference Manual: Standardised Language for the Nutrition Care Process* (4<sup>th</sup> edition). Academy of Nutrition and Dietetics, Chicago, IL, USA

Anderson B, Funnell M (2005) *The Art of Empowerment* (2<sup>nd</sup> edition). American Diabetes Association, Alexandria, VA, USA

British Dietetic Association (2011) *Model for dietetic outcomes*. BDA Professional Practice Board, Birmingham. Available at: <http://bit.ly/R8fcWA> (accessed 18.09.13)

British Dietetic Association (2012) *Model and process for nutrition and dietetic practice*. BDA Professional Practice Board, Birmingham. Available at: <http://bit.ly/1a44A3X> (accessed 18.09.13)

Colberg SR, Sigal RJ, Fernhall B et al (2010) Exercise and type 2 diabetes. The American College of Sports Medicine and the American Diabetes Association: joint position statement. *Diabetes Care* **33**: e147–67

Department of Health (2011). *The NHS Outcomes Framework 2012/13*. DH, London. Available at: <http://bit.ly/18yBgze> (accessed 18.09.13)

Department of Health (2012) *Health and Social Care Act*. DH, London. Available at: <http://bit.ly/HFwua5> (accessed 18.09.13)

Dyson PA, Kelly T, Deakin TA et al (2011) Diabetes UK evidence-based nutrition guidelines for the prevention and management of diabetes. *Diabetic Medicine* **28**: 1282–8

NHS England (2012) *CCG Outcomes Indicator Set 2013/14*. NHS England, Redditch. Available at: <http://bit.ly/19eZpfh> (accessed 18.09.13)

Pi-Sunyer FX (2005) Weight loss in type 2 diabetic patients. *Diabetes Care* **28**: 1526–7

SIGN (2010) *Management of Obesity*. SIGN, Edinburgh. Available at: <http://www.sign.ac.uk/pdf/sign115.pdf> (accessed 19.09.13)