Providing systematic and effective patient education for Type 2 Diabetes

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Introduction

All people with type 2 diabetes (T2DM) should be referred for structured diabetes patient education delivered by a multidisciplinary team (Colaguiri et al. 2009). In rural areas this is not always possible. The gap between evidence-based practice and current GP practice has been well documented and effective strategies are needed to promote the adoption of the evidence-based practice guidelines in diabetes management (Thepwongsa et al. 2014). It is important that information given to patients is consistent and that they do not receive conflicting advice from health practitioners. Our aim was to develop and evaluate a flexible, evidence-based diabetes program for delivery online or in print. The program can either stand alone or be delivered by specially trained practice nurses and/or by dietitians and exercise physiologists (EPs) who could be accessed remotely using teleconferencing. The program is being evaluated in three stages. Stage 1 tested the effectiveness of the program delivered by a dietitian and an EP. Stage 2 will assess the effectiveness of the program when delivered by trained practice nurses. Stage 3 will trial delivering the program by teleconference. This article reports on stage 1.

The underlying pathophysiology in T2DM is insulin resistance followed by an inability to produce adequate insulin. T2DM can be reversed by severe energy restriction (Taylor 2013). This is not feasible for most free-living people. However, it has been shown that moderate weight loss, especially if combined with regular exercise, improves control (Gregg et al. 2012). The program focused on weight loss (energy balance), carbohydrate counting and exercise.

Participants, methods and results

The 12 module, online program was written by dietitians and EPs and was based on current evidence-based guidelines (Colagiuri 2009). Participants were able to access the information either online or were provided with hard copies. All participants were provided with pedometers to measure physical activity.

Thirty patients with T2DM were recruited from a rural practice in Stroud, NSW. Participants attended seven face-to-face sessions with allied health professionals; five with a dietitian and two with an EP. An appointment with the GP and/or practice nurse was attended at the beginning and end of the 12 week program. Outcome measures included anthropometry, HbA1c, blood lipids, self-efficacy as well as attendance and weekly food and exercise logs. Comparisons between baseline data and 12-week outcomes were determined using the Wilcoxon signed-rank sum test. Statistical analysis was performed using STATA 10 (StataCorp. 2007. *Stata Statistical Software: Release 10*. College Station, TX: StataCorp LP).

Table 1 Baseline and mean change: anthropometry, biochemistry and self-efficacy (n=28, 13 male)

	Baseline mean	Mean change	p-value
Weight (kgs)	87.49 ± 18	-2.76 ± 3.03	0.00001
BMI (kg/m2)	33 ± 5.64	-1.18 ± 1.09	0.0000
% weight loss	-	-3.02 ± 3.10	N/A
Waist (cm)	106.27 ± 13.70	-4.05 ± 4.47	0.0004
HbA1c(%)	6.37 ± 1.03	-0.24 ± 0.83	0.1613
Total Chol (mmol/L)	4.20 ± 0.82	-0.11 ± 0.55	0.1255
HDL (mmol/L)	1.14 ± 0.24	+0.11 ± 0.13	0.0002
LDL (mmol/L)	2.20 ± 0.76	-0.09 ± 0.42	0.3760
Triglycerides (mmol/L)	1.88 ± 0.91	-0.33 ± 0.72	0.0247
Self-efficacy*	37.4 ± 21.62	-21.8 ± 14.49	0.0000

Measurements are reported as means ± standard deviation

* Assessed using the Problem Areas in Diabetes (PAID) scale of 20-items with a maximum score of 100. Higher scores reflect higher diabetes-related stress and are associated with poorer glycaemic control (Hayashino et al. 2012)

All participants completed the 12 week program, however, data for two participants was not included in the analysis due to medication changes during the study period. Of the 210 scheduled appointments, 207 were attended. Mean age at baseline was 65.8 years (45-84 years) and mean years since diagnosis was 3.7, ranging from 3 months to 25 years. During the program, the average number of steps per day was 5,100, with 8 participants (29%) recording an average of more than 7,000 steps per day. There were significant improvements in weight, BMI, waist circumference, HDL, triglycerides and diabetes-related stress.

Consultations were bulk-billed, or if patients were ineligible to access medicare rebates, provided free of charge. Each participant had a CDMP and TCA, prepared by the practice nurse in most cases. Patients were supplied with a kit (usual cost $79) which included online access to the program, an pedometer and measuring items including cups, spoons and tape measure. The revenue generated for the general practice was approximately $535 per patient.

Conclusion

This program addressed the determinants of diabetes (weight and physical activity) and was effective in improving a range of health indicators that are associated with improved outcomes in people with T2DM. The improvements in biochemistry achieved in 12 weeks were comparable to those achieved in 18 months by a program with a medication focus (Blackberry et al. 2013). Measures of self-efficacy improved significantly over the 12 week study period reflecting lower diabetes-related distress which is associated with improved self-care behaviours, better glycaemic control and reduced diabetic complications (Polonsky et al. 1995).

Alternative modes of delivery are necessary to enable those in rural areas to access structured diabetes education based on current best practice guidelines for the management of T2DM. Further research is needed to determine whether these results can be replicated when practice nurses or teleconference methods are used as a substitute for face-to-face education.

References:

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