Contents lists available at ScienceDirect

Primary Care Diabetes

journal homepage: http://www.elsevier.com/locate/pcd

Brief report

A pilot service-evaluation examining change in HbA1c related to the prescription of internet-based education films for type 2 diabetes

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ARTICLE INFO

Article history:
Received 25 November 2016
Received in revised form
15 February 2017
Accepted 16 February 2017
Available online 11 March 2017

Keywords:
Diabetes
Patient education
Internet
Films
HbA1c

ABSTRACT

We undertook a pilot service-evaluation of prescribed internet-based patient education films for patients with type 2 diabetes. The uptake was 28% and film watching was associated with a relative mean difference in HbA1c of −9.0 mmol/mol in the film watchers compared to non-watchers over a three-month period (P = 0.0008).

1. Introduction

Providing education and knowledge to patients with type 2 diabetes is a mainstay in management. With respect to type 2 diabetes, these programmes are successful, but require infrastructure and funding to support their delivery. Furthermore, one criticism of published studies is the focus on participants that have attended the sessions [1,2]. The available literature recognises that the uptake of patient education courses for type 2 diabetes and other chronic conditions is low [3–6]. There is little information in the available literature reporting on alternative methods of delivering empirical education to

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http://dx.doi.org/10.1016/j.pcd.2017.02.002

Table 1 – Changes in HbA1c before and after 3 months of internet-based educational films.

	Before	After	Mean difference	P-value
Non watchers (n = 49)				
HbA1c (mmol/mol)	59.1 ± 10.6	60.5 ± 13.2*	+1.7**	0.23
Watchers (n = 19)				
HbA1c (mmol/mol)	57.3 ± 16.0	49.8 ± 10.1*	−7.4**	0.03

* P = 0.0008 for HbA1c at follow-up in Watchers compared to Non-watchers.
** P = 0.01.

patients with type 2 diabetes. If this could be delivered in an economically and clinically effective manner then this might act as a stepping-stone to more structured patient education. Our aim was to undertake a three-month pilot service evaluation of prescribed internet-based patient education films for patients with type 2 diabetes within primary care.

2. Methods

2.1. *Participants*

This work was approved and undertaken as a service-evaluation project within Hywel Dda Health Board South Wales. An initial approach to recruitment was made to patients who had been identified with a new diagnosis of type 2 diabetes within seven primary care practices. The local practice nurses then explained the nature of the films and the process of watching these (as described below). The films were streamed directly to patients' electronic devices (home computers, smart phones, tablets) via e-mail links with one film being released each week. The study ran from the 1st of January 2016 to the 1st of October 2016. A blood sample was collected and analysed in the routine clinical chemistry laboratory at the time of the film prescription and at three months.

2.2. *Video preparation and prescribing*

High quality, diabetes-specific educational and motivational films funded by the Welsh Government were developed. The creation and distribution of these films was self-funded by eHealth Digital Media Ltd and subsequent films offered to the NHS on a low-cost subscription basis paid for 'per condition per patient population'.

The films focussed on diet, weight, foot care, medication and monitoring. Patients were prescribed between 8–11 films at the time of recruitment using a web based application https://clinic.pocketmedic.org/. Each patient consented to the evaluation by providing their name and email address to enable the application to send hyperlinks of the films by email. The application automatically creates a patient account accessed at https://www.pocketmedic.org/by entering their email address and a secure PIN number. There were 11 films relating to type 2 diabetes in the series each lasting 5 min. The films were made in partnership with the authored clinicians (SR, JWS). The films used in this study were as follows:- What is diabetes?; It's been a week now. . .. Jill's story; What can I eat? Medication and Monitoring; Introducing the Eatwell Guide; Looking after your feet; Jeff's story; So What Can I Do?; Diabetes and Weight; Tony and Michelle both live with diabetes; Stop smoking. The content of the films allows type 2 diabetes to be explained using clear visuals. Expert patients describe their understanding of type 2 diabetes, how this affects their lives; and management with diet, exercise, medication or injectable therapies. "What can I Eat?" is addressed along with healthy eating principles. Patients share real experiences to engage others with understanding the principles of diabetes self-management in partnership with their healthcare professionals. The content of the films are based on the principles of motivational interviewing and self-determination including patient autonomy, competence and belonging [7].

2.3. *Outcomes and statistical analysis*

The overall watch rate was calculated as the percentage of the total films watched relative to the total number of films made available to all the patients. A paired t-test was used to compare differences in HbA1c during the follow-up period. An ANOVA was performed to examine the change in HbA1c within the group, correcting for the baseline HbA1c. A Pearson correlation was performed to examine the association between change in HbA1c and the number of films watched.

3. Results

Sixty-eight patients (30 males, 38 females) with a mean age of 68 ± 18 years were prescribed the films. Of these, 49 did not watch any (non-watchers), whilst 19 (28%) watched the films (watchers). There was considerable variation in the number of films watched (median 4; range 1–11) and the overall watch rate was 13% (82/633). There was no significant difference in age between the watchers and non-watchers (63.9 ± 11.4 vs. 65.5 ± 12.1 years, P = 0.61). No differences were observed at baseline in HbA1c. As shown in Table 1, there was a significant mean decrease in HbA1c of 7.1 mmol/mol in the watchers. No decrease was observed in the non-watchers. Of interest, at follow-up the mean relative difference in HbA1c between the watchers and non-watchers was −9.0 mmol/mol (P = 0.0008). An ANCOVA was consistent with this result (P = 0.0004), demonstrating that the effect was maintained after correcting for the baseline HbA1c. As described, within the watchers there was variation in the number of films that the patients watched. Of interest there was a significant correlation between the number of films watched and the reduction in HbA1c (r = −0.58, P = 0.01), (Fig. 1).

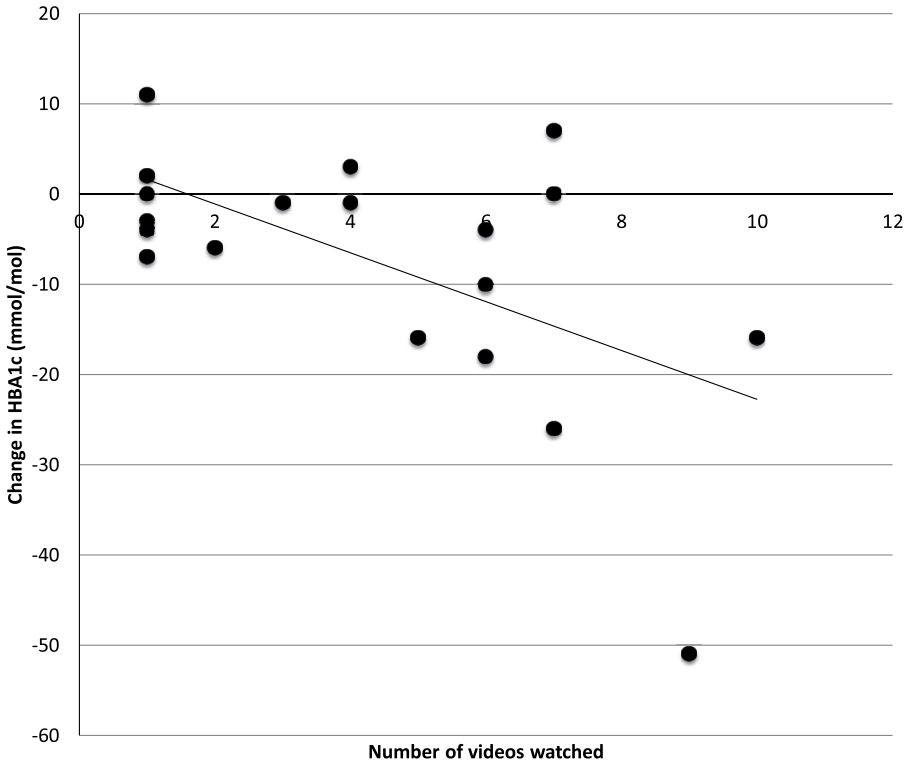

Fig. 1 – Association between the change in HbA1c and number of films watched.
There was a significant correlation (Pearson) between the number of videos watched and the reduction in HbA1c (r = −0.58, P = 0.01).

4. Conclusions

This small, but real world service-evaluation study has examined the use of internet-based educational film prescribing to patients with type 2 diabetes. Within a primary care sample of patients with a mean age of 68 years, 28% (19/68) watched at least one film. Within this group there was a clinically significant reduction in HbA1c at three months, whilst no reduction was observed in the non-watchers. Of interest, the mean HbA1c in the watchers at follow-up was 49.8 mmol/mol compared to 60.5 mmol/mol in the non-watchers. We also observed a significant correlation between the reduction in HbA1c and the number of films watched.

Whilst this is a small study, the results are encouraging and support the need to examine the potential of internet-based educational prescribing. Of note a HbA1c difference in the watchers compared to the non watchers of −9 mmol/mol (−0.82%) at 3 months is clinically significant, and compares favourably with studies looking at HbA1c reduction associated with the DESMOND programme (−0.28% at 12 months) [3], intensive therapy (−0.33% at 3 months) [8] and a meta-analysis of self monitoring of blood glucose (0.2–0.25% over 3 and 6 months) [9].

Clearly there are weaknesses to our observational small study, but there is a need to deliver basic knowledge and education to the growing number of patients with diabetes. We, and others acknowledge that an evidence based structured education programme is the accepted method of education in patients with type 2 diabetes. We would suggest that the approach of film based prescribing might be a stepping-stone to facilitate and encourage further structured education.

Conflicts of interest

KL is the founder and the Creative Director of PocketMedic.

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