

[P277] A North West London pilot study of digital behaviour change programmes for patients with Type 2 Diabetes

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Summary

- We evaluated three smartphone-based digital behaviour change programmes lasting 8 to 12 weeks for patients with Type 2 Diabetes (T2DM): Changing Health, OurPath and Oviva Diabetes Support.
- All programmes resulted in mean improvements in clinical indicators relevant to T2DM (weight, body mass index [BMI], glycated haemoglobin [HbA1c], blood pressure, and medication use).
- Of 118 patients 19% were not on metformin post programmes. This may have been due to improvement in clinical outcomes such as HbA1c.
- Patient feedback on all three digital behaviour programmes was generally positive, although access to a compatible smartphone was a barrier for some.
- Completion rates appeared to be much higher for the digital behaviour change programmes than for face-to-face diabetes structured education at participating practices.
- Within the limitations of this pilot, results support the wider use of smartphone apps for delivering structured diabetes education.
- This evaluation was not a direct comparative analysis between the three programmes.

Background

In North West London (NWL), approximately 129,000 people are diagnosed with Type 2 diabetes mellitus (T2DM). They spend, on average, around three hours with a healthcare professional annually and manage their condition themselves for the remaining 8,757 hours. Smartphones are increasingly becoming a tool used to manage lives and there are many apps and digital programmes available to support people with diabetes to self-care.

Aim

To test whether the use of a digital behaviour change programme can lead to positive health benefits for people with T2DM.

Methods

Three digital behaviour change programmes were rolled out to 430 patients with T2DM across 18 GP Practices in NWL between March and August 2017. Programmes offered structured diabetes education and lifestyle tracking (e.g. diet and fitness) mainly through smartphone app, with remote support from a trained behaviour change coach or diabetes educator. Programmes lasted between 8 weeks (Oviva) and 12 weeks (Changing Health and OurPath), with ongoing access to the smartphone apps and educational resources after completion. Non-identifiable demographic and clinical data (age, ethnicity, index of multiple deprivation [IMD], weight, BMI, HbA1c, blood pressure, and medication use) were extracted from patients' medical records before and after participation. The Patient Activation Measure (PAM) was collected at baseline and completion. Data on uptake, engagement, completion, usability and patient experience were recorded as part of the programme. Qualitative feedback was obtained through patient focus groups and email surveys.

Results

Data were available for 295 patients. Mean age was 57 years (range, 32 to 89) and ethnicity for most participants (79%) was non-white. Where available, completion rates of the digital programmes in this pilot (Table 1) were much higher than for face-to-face diabetes structured education (<6.3% completion for DESMOND, DAFNE and X-PERT) at participating practices.

Table 1: Uptake and completion data for the NWL pilot programmes

Programme	Uptake on referrals	Completion
Changing Health	83/167 (50%) individuals downloaded the app	No data available
OurPath	133/186 (72%) of referred patients enrolled	70/133 (53%) had completion data available
Oviva	88/120 (73%) of referred patients enrolled	82% completed the programme

Demographics available for 119 pts

Ethnicity	Frequency	Percent
Asian	27	23
Black	32	27
Mixed	19	16
Other	16	13
White	25	21
TOTAL	119	

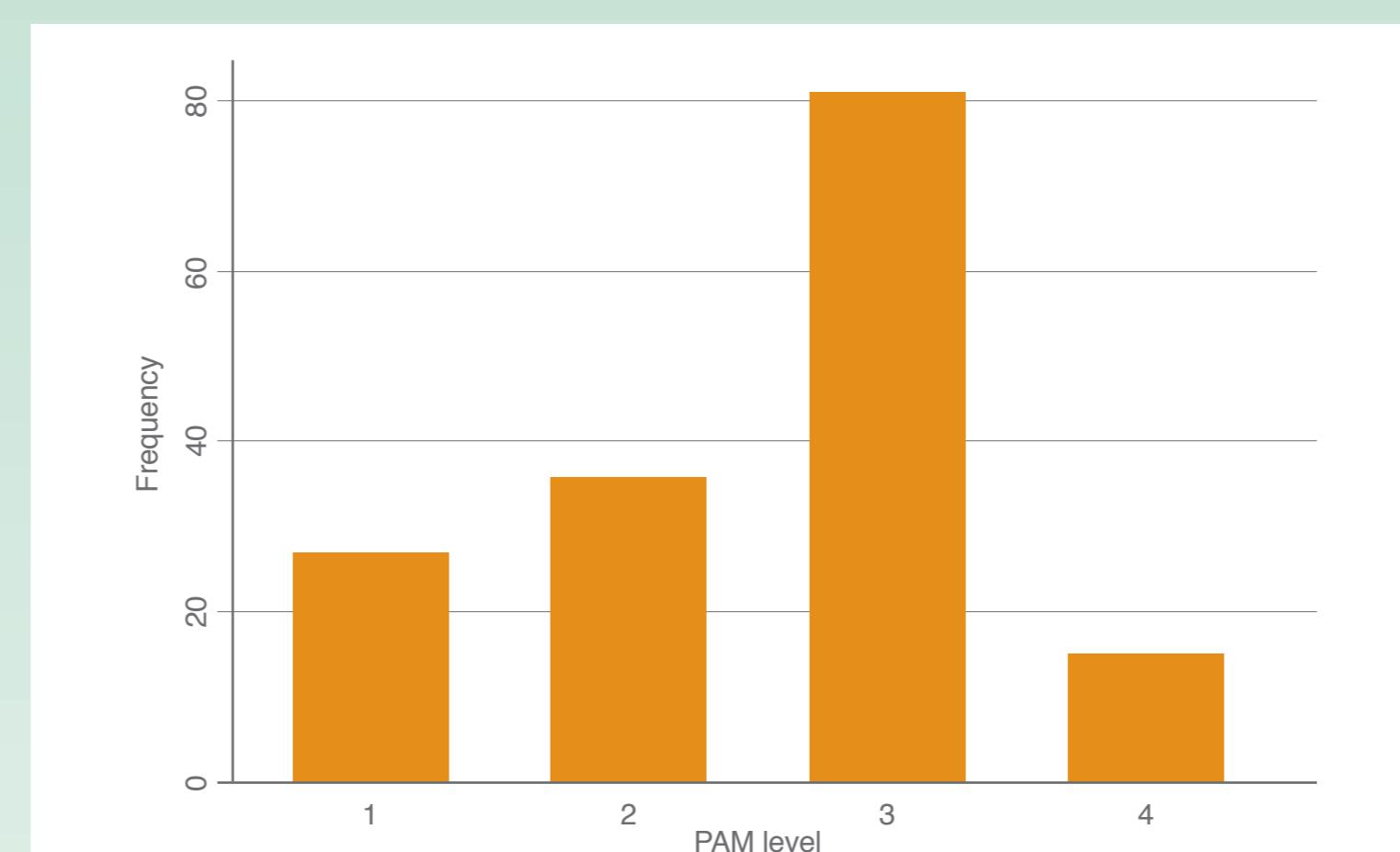
References

- Hibbard JH and Gilbert H. Supporting people to manage their health: An introduction to patient activation. The King's Fund (2014);
- Ellis J, Coulter A. How engaged are people with their healthcare? Findings of a national telephone survey (2005). Available from: <http://www.picker.org/wp-content/uploads/2014/10/How-engaged-are-people-in-their-health-care---.pdf> [Accessed February 2018]

Patient activation measure (PAM)

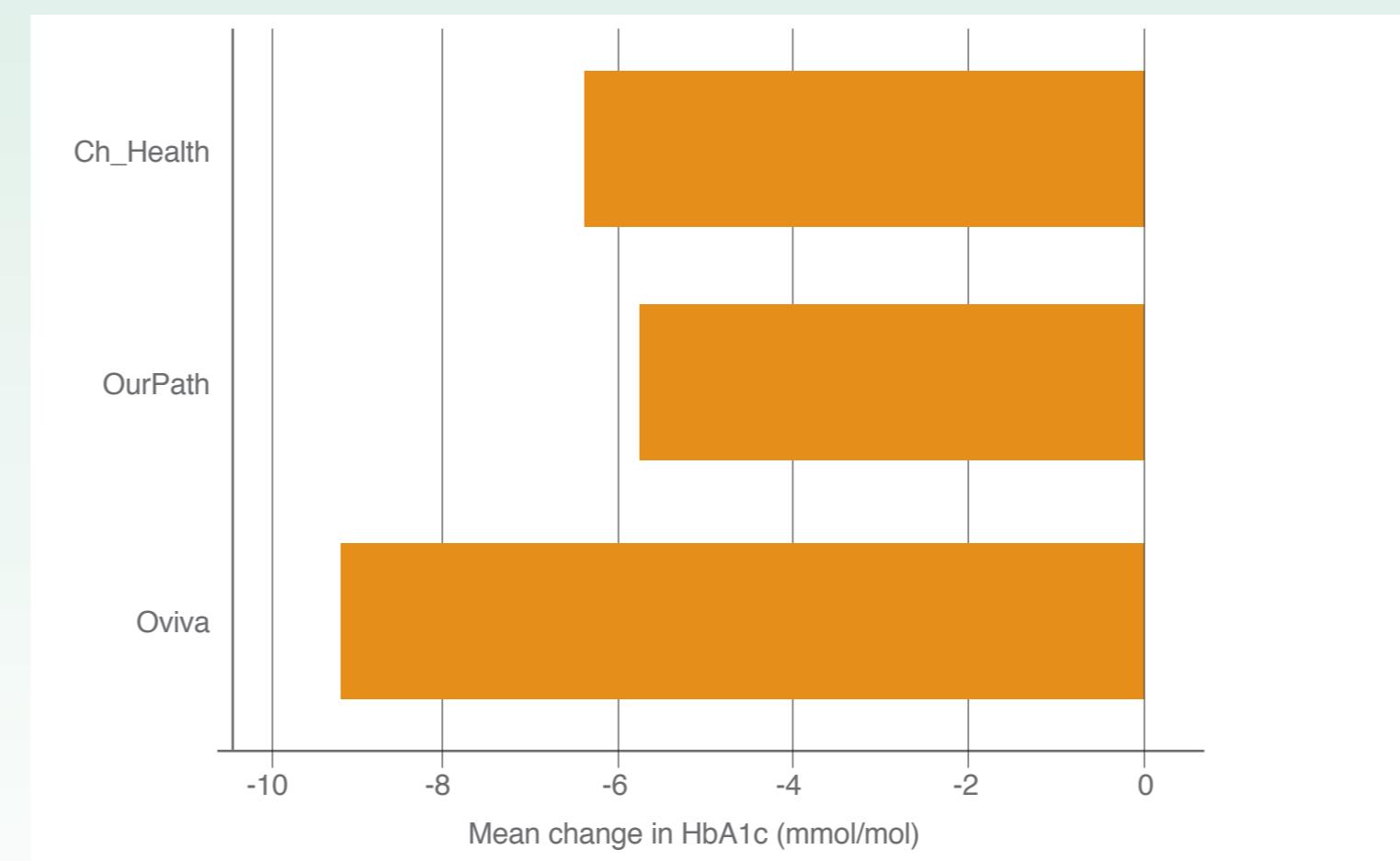
PAM is a validated patient-reported measure of skills and confidence in managing health, which is associated with clinical outcomes and healthcare costs.¹ Most patients (51%) were PAM level 3 before enrolment (Figure 1). Patients at this PAM level typically know key facts about their health and strive for best practice behaviours based on specific goals.

Figure 1: Distribution of PAM level at baseline for NWL pilot study population

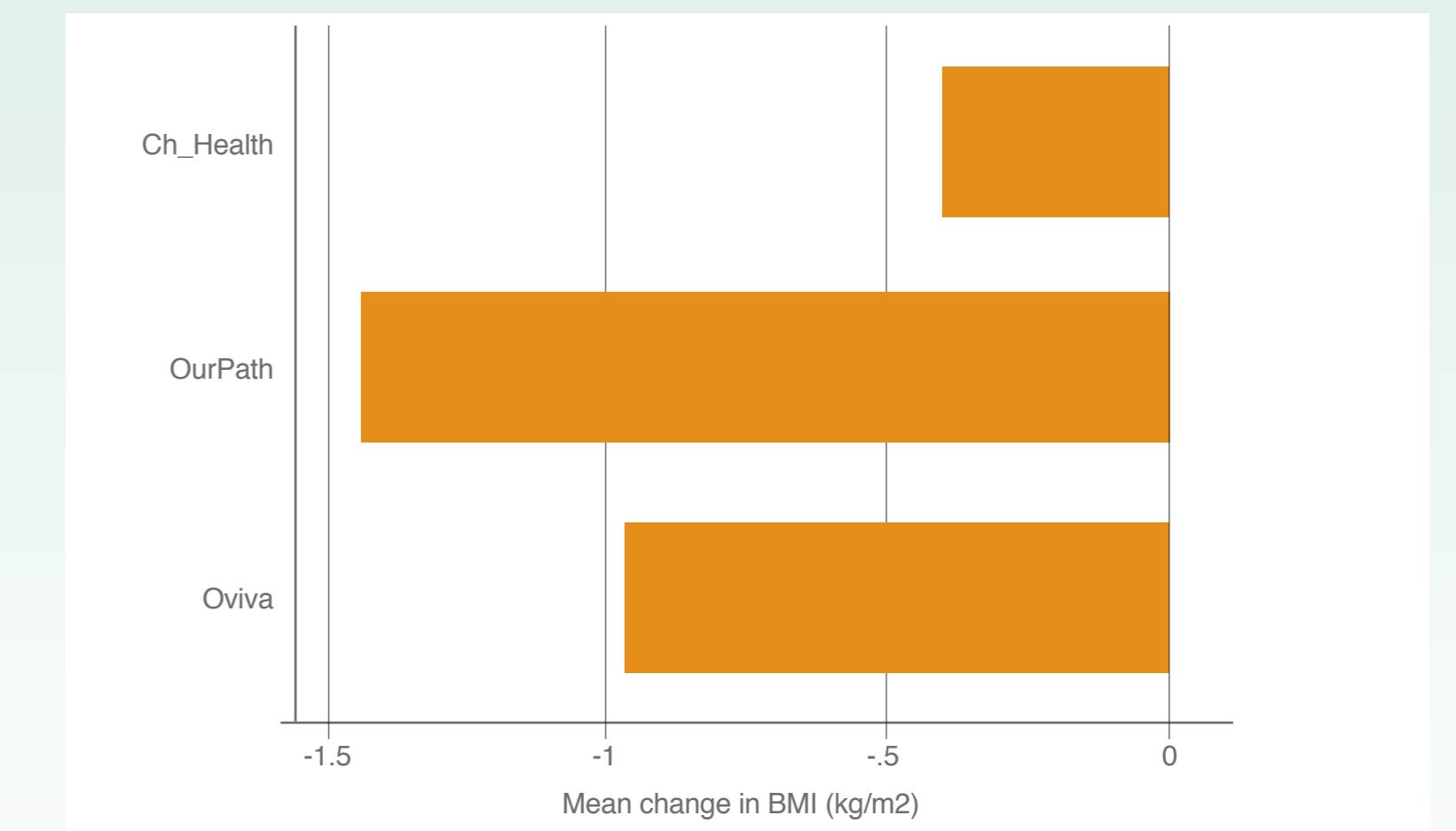


Clinical outcomes

Figures 1: change in HbA1c



Figures 2: change in BMI



Figures 1 and 2 are descriptive figures and do not make inferences on the differences between programmes.

Across the study population, there was a mean negative change (i.e. a reduction) in all clinical indicators measured after the programme compared with baseline levels (Table 2). Median HbA1c, BMI and systolic blood pressure (SBP) was significantly lower after the programme compared with pre-enrolment levels, based on a Wilcoxon signed-rank test. Changes in clinical indicators during the programme showed low correlation with PAM or IMD and not significant ($p>0.05$).

Table 2: Mean change in clinical indicators after participation in the NWL pilot study population

Variable	Number of observations	Mean change	Std. Dev.
Weight change (kg)	140	-2.5	4.7
BMI change (kg/m ²)	112	-0.99	1.8
HbA1c change (mmol/mol)	160	-6.9	14.6
SBP change (mmHg)	151	-3	15
DBP change (mmHg)	151	-2	10

The preliminary data suggested that there were some differences in the various outcomes between programmes. Due to limitations in data, for example, length of follow up and additional confounding factors, this study does not make any direct comparisons between programmes. Further analysis would be needed in the longer term.

According to prescription data extracted from medical records, 23 patients discontinued metformin while taking part in the programme. Reductions in HbA1c, weight and blood pressure for these patients indicate they may have been able to discontinue metformin because clinical indicators improved during the programme.

Patient feedback

Patient feedback on all three digital behaviour programmes was generally positive:

- The Net Promoter Score (NPS), which measures the likelihood of recommending a service to family, friends or colleagues, was positive for Changing Health and OurPath. Oviva participants did not complete NPS, but most said they would recommend the programme to family and friends.
- Most patients said they had experienced a benefit from taking part in the programme (in some cases describing it as "life changing").
- Some patients reported improvements in their general wellbeing and motivation, and others said that they had avoided needing to start medication by taking part.

The main negative comments from patients related to technical problems with the smartphone app or a connected device, or incompatibility with (or not owning) a smartphone. A few patients, particularly those who were already well-informed about diabetes, did not feel the digital behaviour change programme or smartphone app were useful for them.

Conclusions

Overall, high completion rates coupled with positive change in clinical indicators in this pilot suggest for digital behaviour change programmes may be an effective alternative to face-to-face programmes.

Patients may prefer digital programmes because of their easy access, flexibility and integration of educational resources and support through a single medium (i.e. a smartphone app).

Within the limitations of this pilot, results support the wider use of smartphone apps for delivering structured diabetes education within the NHS.

A block contract provider payment system and low completion rates for face to face programmes may be an inefficient way of procuring structured education services. An alternative provider payment system along with digital health programmes (such as above) which suits individual patient needs should be considered.