Independent Evaluation of Patient Engagement Pilot for Type 2 Diabetes (PEP-T2D)

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DISCLAIMER

This report presents the findings of an independent evaluation of a survey, app data and clinical attendance data from Ayogo Health Inc. The findings of this independent evaluation are those of the author and do not necessarily represent the views of Ayogo Health Inc.

ACKNOWLEDGEMENTS

We would like to thank the Ayogo Team (Michael, Brian, Kelsey, Clare) and the General Practice Principal Investigators (Dr Anthony Leung (Badgerswood & Forest Surgeries, Bordon); Dr Ashraf Zaman (Pinehill Surgery, Bordon); Dr Kathryn Bannell (The Grange Surgery, Petersfield); Dr Andrew Holden (The Swan Surgery, Petersfield); Dr Paul Howden (The Whiteley Surgery, Fareham); and Dr Donal Collins (The Highlands Practice, Fareham) for participating in this evaluation.
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1. SUMMARY

The Department of Health and Social care has set out care processes that people with Type 2 diabetes (T2D) should receive each year to prevent and detect the early signs of complications. Newly diagnosed patients should also complete an education program (e.g. DESMOND, X-PERT) to learn how to manage their condition effectively. In 2017, the NHS asked companies for ideas on improving outcomes for patients through behaviour change that required no change to the existing clinical pathway. The company Ayogo Health Inc. (Ayogo) submitted a proposal to the Wessex Academic Health Science Network (AHSN) and were selected to establish a partnership.

For this study, we tested a very basic version of an app with participants to increase their engagement and confidence in managing their diabetes. The app was offered to 104 newly diagnosed type 2 diabetes patients that were identified and recruited by diabetes nurses in 7 GP surgeries in Hampshire. From this pool, 76 decided to use the app and 17 agreed to complete a short survey of their experience with the Ayogo app.

We looked at how the participants reported feeling about the app and their ability to manage diabetes, as well as how they used the app and whether it made a difference to their attendance at specific activities. These activities included a diabetes education course, foot exams and eye exams. All three activities are on the NICE T2D pathway and have data readily available from GP surgeries, with offering education also included in the GP contract Quality Outcomes Framework and both foot exams and eye exams listed in the NICE nine recommended care processes.

The main messages are:

- First UK application of Bandura’s self-efficacy concept to a T2D app
- Most participants offered the app took up the opportunity and continued to use it
- Participants enjoyed using the app and found it helpful
- Participants mostly used the articles and self-care pages
- There was no difference in activity attendance

As participants liked the app and it did not negatively affect their healthcare pathway, it is reasonable for the app to be further developed into a fully working version to test if it can improve patient self-care and health activity attendance.
2. BACKGROUND AND OVERVIEW

BACKGROUND

The Department of Health and Social care has set out nine care processes that people with T2D should receive each year to prevent and detect the early signs of complications.[1] The processes are:

1. Blood glucose level measurement (HbA1c)
2. Blood pressure measurement
3. Cholesterol
4. Kidney function testing (Urinary albumin)
5. Kidney function testing (Serum creatinine)
6. Weight check
7. Smoking status
8. Eye examinations
9. Foot examinations

Newly diagnosed T2D patients should also complete a one-day structured education program (e.g. DESMOND, X-PERT) to learn how to self-manage their condition effectively. This is covered NICE guideline NG28.[2] The NHS Digital National Diabetes Audit results for March 2018 reports that 8.3% of adults with type 2 diabetes attend a structured education programme after a referral.[3] By encouraging patients to become involved with their condition, it will hopefully enable them to have better diabetic control and reduce or delay the onset of long-term complications, which is both a debilitating and expensive aspect of diabetes management.

In 2019 [4,5,6,7]:

- 7% of adults in England are diagnosed as having diabetes (approx. 3.3m people)
- Approx. 6% in Hampshire and IOW (HIOW) STP
- 6.9% in Fareham & Gosport (F&G) CCG
- 7.0% in South East Hampshire (SEH) CCG
- About 90% of those have T2 diabetes
- The majority of those with T2 diabetes are in the age range 40-79.
  - slightly more than half of these are in the age range 65-79 in F&G and SEH CCGs.
  - in England as a whole, slightly less than half are in the age range 65-79 group (i.e. more people 40-64 diagnosed than 65-79).
- “someone is diagnosed with diabetes every 2 minutes”
- 8.5% of adults in England are estimated to have diabetes (i.e. includes those undiagnosed)
- New diagnosis of diabetes (T1 and T2)
  - Over 156,000 in England
  - 4576 in HIOW STP
  - 655 in F&G CCG
  - 713 in SEH CCG
- 27,000 heart attacks and almost 100,000 cases of heart failure across the UK
- More than 8,500 leg, toe, or foot amputations across the UK
• 7% of people with newly registered sight loss have diabetes (England and Wales) and more than 25% people with Type 2 diabetes have some form of diabetic retinopathy (UK)

An important concept for this project is that of self-efficacy, developed by Albert Bandura. Self-efficacy is defined as a personal judgment of "how well one can execute courses of action required to deal with prospective situations". This affects individual behaviour in that the beliefs a person holds regarding their power to affect situations strongly influences both the power they have to face challenges competently and the choices they are most likely to make. A further refinement, or application, of this concept is perceived self-efficacy. This refers to a person’s belief in their agentive capabilities - that they can produce given levels of attainment. Thus, a self-efficacy belief includes both an affirmation of a capability level and the strength of that belief. [8]

Perceived self-efficacy has been suggested as an influence on health behaviour and self-care. This may be important as healthcare moves from a medical to health promotion/prevention model. Research has shown that efficacy plays a role in influencing the adoption, initiation, and maintenance of healthy behaviours, as well as minimising unhealthy practices. [9] Thus, the integration of self-efficacy interventions into patient education, such as providing examples of other people acting on a health promotion behaviour followed by working with the patient to encourage their belief in their own ability to change, could support healthcare provision. [10]

There are over 325,000 mobile device apps for lifestyle and healthcare delivery (mHealth) available across the major app stores in many health-related categories including fitness, cardiology, diabetes, obesity, smoking cessation, and chronic lung diseases. [11] Many healthcare providers lack the time to provide patients with the continuous care necessary to manage chronic diseases. Thus, mHealth apps can potentially benefit both patients and healthcare providers by delivering remote education, care and monitoring, thereby saving time and reducing costs. [12]

A systematic review of general health and fitness apps provided modest evidence that app-based interventions to improve diet, physical activity and sedentary behaviours can be effective. Most of the interventions that reported significant improvements in the behavioural and health outcomes included goal-setting, self-monitoring and performance feedback in the app design. Other apps with positive results also incorporated further behaviour change techniques, such as motivational messages, health education/tailored advice, and reinforcement. [13]

In the UK, some apps have tried address T2D self-management specifically. An evaluation of three digital behaviour change programmes (Changing Health, OurPath and Oviva Diabetes Support) reported generally positive patient feedback (although access to a compatible smartphone was a barrier for some) and higher completion rates for the digital behaviour change programmes compared to face-to-face diabetes structured education. The results gave limited support to the wider use of smartphone apps for delivering structured diabetes education in the UK. [14]
PARTNER SELECTION AND DEVELOPMENT PROCESS

In 2017, the Hampshire and Isle of Wight STP and Wessex AHSN released a call for Expressions of Interest to develop Strategic Partnerships and R&D Collaboration Agreements with Industry and other partners in the following three areas:

1. Population health management
2. Improving outcomes for patients through supporting workforce and patient behaviour change
3. Outcomes-based commissioning

A company called Ayogo submitted a proposal to the Wessex AHSN and were selected to establish a work programme for improving outcomes for patients through behaviour change. Ayogo committed to implementing a 16-week Pilot Project in 7 general practice surgeries in Southern England. For the pilot, Ayogo designed, developed and deployed a patient-facing solution to enhance patient engagement and perceived self-efficacy to self-manage important and prioritised aspects of T2D.

The application of Bandura’s self-efficacy concept to T2D measured through a Likert-based self-efficacy scale, rather than traditional patient-related measures (e.g. Patient Activation Measure), was a UK first.

Participant interviews, for the purpose of co-production, started in the autumn of 2017 and continued in the first half of 2018. A design and development team from Ayogo held meetings in the Wessex AHSN geography between January and March 2018 to present, discuss, and get feedback on design concepts for the proposed AyogoT2D mobile application (app).

Through discussions with doctors, diabetes nurses, T2D patients, and health system stakeholders, Ayogo has gained an in-depth understanding of the local challenges and pain points in the patient journey.

A minimum viable product (MVP) app was tested in a 16-week Pilot Project that ran from October 2018 to April 2019, after which it was evaluated against specific effectiveness criteria. The MVP offered 5 kinds of support:

- Check-in and reminders
- Educational content (from Diabetes UK)
- NHS Services
- Diabetes Logbook
- Action Planning

The main message for the MVP was around increasing patient confidence with respect to handling their diabetes.
Figure 1: Screenshots of the PEP-T2D app
AIM AND OBJECTIVES

The aim of the pilot project was to demonstrate sufficient value to people and the health system for the NHS to consider a commercial relationship with Ayogo for future iterations and broader deployment of its innovative patient-facing solution based on the concept of patient self-efficacy.

The objectives of the pilot project were to:

1. Demonstrate the ability of the PEP-T2D app to increase T2D patients perceived self-efficacy to self-manage their disease.

2. Increase the number and timeliness of newly diagnosed T2D patients that complete the following Care Processes:
   a. Foot Exams
   b. Eye Exams (Digital Retinal Screening)
   c. Structured Education Program (DESMOND)

3. Share actionable insights into T2D patients perceived self-efficacy and health behaviours with their healthcare providers.

Importantly, this was a feasibility study, intended to support, or not, the need for a larger confirmatory study (See section 3.8 – Statistical analysis)
3. METHODS AND EVALUATION QUESTIONS

CONCEPTUAL FRAMEWORK

The evaluation design was derived from the PEP-T2D app pilot logic model (Appendix 1) and both primary and secondary evaluation questions, which are described below. These do not sit alone and much of the work followed a combined or ‘mixed methods’ approach to triangulate the findings.

The outcome measures set out to explore if app support of the existing care pathway provides the following:

- more empowered and confident patients
- increased number and timeliness of education, diabetes eye & foot exams
- more satisfied and engaged patients and clinicians

It was expected that decreased scores would not be observed, as that would indicate that the behavioural science underpinning the app programming is either not applicable to the target patient group or that the behavioural science approach was not applied effectively in the app design.

SCOPE AND DESIGN

The evaluation sought to understand the extent to which the PEP-T2D app had been rolled out, the impact of the PEP-T2D app on participants using the PEP-T2D app and the factors which enabled or hindered the roll out of the PEP-T2D app. It employed quantitative data and qualitative data collected from multiple sources over the course of the evaluation to answer primary and secondary questions.

PRIMARY QUESTIONS

- Has there been a change in Perceived Self-efficacy scores over time?
- Has there been a change in the number and percentage of completed:
  - foot exams (Foot Risk Surveillance)?
  - eye exams (Digital Retinal Screening)?
  - DESMOND course attendance (Structured Education Program)?
- Has there been a change in the time elapsed between diagnosis and completed:
  - foot exams (Foot Risk Surveillance)?
  - eye exams (Digital Retinal Screening)?
  - DESMOND course attendance (Structured Education Program)?

SECONDARY QUESTIONS

- Is there a correlation between self-reported activities vs. recorded attendance?
- What are patient and HCP perceptions about the value of the PEP-T2D app?
- What were utilization patterns of the PEP-T2D app?
- Which features of the app were useful; how could it be improved?
- What is the impact of the roll out of the PEP-T2D app on the existing pathway of care on people with newly diagnosed T2D?
QUANTITATIVE EVALUATION

Much of the data was routinely collected activity data of the PEP-T2D app. This included:

- Clinical referrals of patients to Ayogo-T2D app and downloading / on-boarding
- Usage of Ayogo-T2D app for duration of pilot
- Usage of specific content and features of the app
- Perceived Self-efficacy Scores over time (between on-boarding and trial end)

In addition to participants self-reporting their activities, GP surgeries provided data to look at:

- Uptake of DESMOND (total number, percentage and time elapsed)
- Uptake of eye exams (total number, percentage and time elapsed)
- Uptake of foot exams (total number, percentage and time elapsed)

Other derived metrics included:

- Number of individuals who complete the app log-in procedure
- Number of check-ins completed
- % of enrolments from e-referral received
- % of accepted referrals enrolled to the programme

Although there was no formal control arm, we made a comparison to baseline data covering a 16-week period during the same calendar months from the previous year. This comprised patients newly diagnosed with T2D with the clinics, but who were not offered the PEP-T2D app. There will not be a control group of patients undergoing the same measures as the intervention group.

For analysis, aggregated data provided by each of the services was used. The evaluation team worked with the involved GP surgeries to develop a specification for the data fields required from the clinic information systems to capture all the above measures.

QUALITATIVE EVALUATION

The qualitative analysis captured the views of participants by investigating how the PEP-T2D app support model worked in practice, its feasibility and acceptability. The design of the qualitative evaluation responds to the outcomes and impacts described in the logic model (Appendix 1) related to desired changes in knowledge, awareness and attitude and changes in behaviour of those involved. The qualitative fieldwork was undertaken via a website, comprising participant surveys (Appendix 2).

A consecutive sample of participants for survey was obtained by purposely and consecutively inviting all eligible patients to participate. Patient survey questions were derived from the logic model and evaluation questions. We aimed to receive completed surveys from 100 participants, with a minimum 20% response rate of eligible users, corresponding to 20 completed surveys (see Statistical Analysis, Section 3.8).
DATA COLLECTION

This was a light-touch evaluation involving both qualitative and quantitative data collection. PEP-T2D app uptake, engagement, completion, usability and participant experience metrics were collected by Ayogo. Clinical pathway uptake data was provided by the GP surgeries, who de-identified and forwarded the data to the evaluation team. Qualitative feedback was collected by online survey.

SAMPLING

Six GP surgeries (over 7 sites) signed up to offering the PEP-T2D app to their patients, without altering any part of the current clinical pathway. The surgeries were:

Badgerswood & Forest Surgeries, Bordon (2 sites); Pinehill Surgery, Bordon; The Grange Surgery, Petersfield; The Swan Surgery, Petersfield; The Whiteley Surgery, Fareham; The Highlands Practice, Fareham.

Inclusion criteria were:

• Newly diagnosed with T2DM within last 12 months
• Aged ≥ 18 years
• Not previously offered a self-efficacy web app
• Not currently enrolled in any other study
• Able to speak English at level of an 11-year-old
• No special communication needs
• Access to a smartphone that runs either iOS or Android, as well as the internet

Exclusion criteria were:

• Pregnant, planning pregnancy or lactating
• Significant learning difficulties
• Mental or physical incapacity which makes self-management inappropriate

ETHICAL ISSUES

RELATIONSHIP PARTICIPANTS AND EVALUATION TEAM

The evaluation team was independent and had no prior relationship with the participants. No financial incentives were offered as part of the recruitment process.

BENEFITS AND RISKS TO PARTICIPANTS

There were no direct benefits to participants, other than gaining support in self-managing aspects of their T2D. In addition, by sharing their experience participants contributed to the evaluation of the PEP-T2D app and made suggestions for improvement. Their participation helped the evaluation team better understand drivers and barriers to optimal embedding of this support tool in a sustainable way.

It was not expected that the study involved any specific risks.

INFORMED CONSENT AND RECRUITMENT PROCESS

A brochure was offered as part of an existing T2D information bundle provided by the GP surgery. Information about the PEP-T2D app (brochure) was provided to patients with newly diagnosed T2D by
the nurse in the surgery, if the patient matched the criteria. This was provided alongside other diabetes information.

Figure 2. PEP-T2D app Brochure
If they had an interest in using the PEP-T2D app, they went to the website listed on the brochure and sign up/register at home, or they used a Tablet available in the surgery to register on site. There was also a poster provided to all GP surgeries for display in the reception area.

Figure 3. Standard poster for GP surgery reception area.

The participant was asked to provide a mobile phone number to be contacted for the purposes of sending a link, so they could download the PEP-T2D app and for future contacts regarding the app. After registration, they were sent a link to download the PEP-T2D app. They downloaded the app and agreed to the Terms and Conditions. After they used the PEP-T2D app for a period of two weeks, they received an SMS message inviting them to participate in the evaluation of the app. If they were interested, they clicked a link in the SMS message that took them to the AyogoT2D evaluation landing page; there they read the Information Sheet and reviewed the Consent Form. Once they were happy that they had all the information they needed to decide to participate in the evaluation, consent was provided by clicking on a radio button on each line on the Consent Form and providing an electronic signature and date. This consent form was forwarded to Dr David Kryl. After 16 weeks of using the app, they were sent a link to the survey questions via SMS. After completing the survey, participants received a thank you message.

The Information Sheet provided details to the participant of what the study was about, why they had been asked to participate, what would happen to them if they agreed to take part and potential benefits and risks of taking part. They were reassured that the data would be kept confidential in accordance to the Data Protection Act 2018. Participants were also informed that they needed to sign their consent form to confirm they: were happy to participate; understood what was involved; consented to the disclosure of the research information; and could withdraw at any time, even retrospectively. The information provided enabled participants to decide whether they wanted to take...
part in the study. Participants had at least two weeks to decide whether they wished to take part in
the survey.

DATA PROTECTION

A data sharing agreement was signed by all partners, collaborators and Wessex AHSN. Data was
collected by team members, patients, participating clinicians and the evaluation team (Wessex AHSN).
The evaluation lead holds ultimate responsibility for data collection, storage and presentation.

Data was managed according to the University Hospitals Southampton Foundation Trust (UHSFT)
Research Data Management Policy. An individual study Data Management Plan is stored on the
Wessex AHSN network. Data is in standard file formats: .xlsx, SPSS data files, csv, paper, jpegs,
standard audio files. Wessex AHSN provides secure storage for all active research data as per IG level
2 toolkit requirements. The data are regularly backed up and a copy of the backup is regularly off-
sited to a secure location for disaster recovery purposes. De-identified data will be kept at Wessex
AHSN for at least 10 years in line with UHSFT research data policy.

Only de-identified data was provided to the independent evaluator who handled and stored this in
accordance with the agreements described above. Wessex AHSN will ensure that data are handled in
line with the NHS Standards including Data Collection, Code of Practice, and Information Governance.

All Wessex AHSN staff are employed on UHSFT contacts of employment. They are required to adhere
to UHSFT terms and conditions and have received mandatory training on Information Governance and
data protection. The UHSFT Information Governance Policy can be provided upon request. The ASHN
computer network is a private, cloud-based system that is compliant to ISO27001 and approved under
the NHS IG Toolkit. The cloud servers are based in the UK. Only AHSN Evaluation Team members can
access the folders where data in relation to this project is saved – access is controlled by user profiles.
Ten years after the end of this study, all data associated with the study will be deleted. This will be
undertaken by the AHSN's IT provider, and written confirmation of the deletion will be requested.

Personal data about the participants will remain confidential. By taking part, participants agreed that
what they wrote in the survey will be paraphrased and/or directly quoted in reports and publications,
academic or otherwise.

Personal and sensitive personal data may have been entered by the participant into the app, for their
personal use. Such data was not required for this evaluation.

APPROVALS

This project obtained both REC and HRA approval for the evaluation through the IRAS portal. The IRAS
Ethics Number is 251736.

We confirmed with the MHRA guidance to ascertain that the PEP-T2D app does not constitute a
medical device.

We completed a Privacy Impact Assessment of the PEP-T2D app.
STATISTICAL ANALYSIS

This project aimed to recruit 100 participants, based on feedback from co-production sessions including the GPs expectation of at least 30 consented participants for the more detailed evaluation by questionnaire. Thus, the detailed evaluation project was planned to be powered at 80%, with a p-value of 0.05, and standardised difference of 1. We calculated that a sample size of 20 would power the study at 60%, which was the minimum feasible power that could claim a weak effect.

The justification for the small sample size was that this was a feasibility study to test an app in a UK population based on the Bandura self-efficacy concept. This meant that, even if an association was found, the reporting would be clear in the conclusions that it was from a hypothesis-generating study and a larger confirmatory study is needed. Therefore, we would not make strong conclusions about the app, whether the results are positive or not. Rather, data from this project should be used to design a larger UK study. [15]

The project consented 17 participants, which meant 55% power for the detailed evaluation. Therefore, there were no statistical differences between the groups on any of the parameters measured.

Power calculations were derived from the Altman nomogram. [16]
4. DESCRIPTIVE STATISTICS

Most of the results presented in this section uses data from participants who consented to the detailed evaluation. This number was small (17), thus any associations are not statistically significant. Any results using aggregated data from all 73 users are labelled as such.

DESCRIPTIVE STATISTICS

In this section, general participation and descriptions of project participants are provided.

OVERALL USAGE

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>No. of referrals</td>
<td>104</td>
</tr>
<tr>
<td>No. of users onboarded</td>
<td>76</td>
</tr>
<tr>
<td>Conversion rate</td>
<td>73%</td>
</tr>
<tr>
<td>No. of repeat users</td>
<td>73</td>
</tr>
<tr>
<td>Repeat user rate</td>
<td>96%</td>
</tr>
<tr>
<td>No. of completed surveys</td>
<td>17</td>
</tr>
<tr>
<td>Completed surveys rate</td>
<td>22%</td>
</tr>
</tbody>
</table>

The project did not meet its target of 100 PEP-T2D participants, with 76 users registering and undertaking at least one activity within the app.

A positive observation was that a very large majority of registered users (96%) undertook more than one activity within the app. This indicates that they found the app useful enough to keep using it.

There were project participants from 5 out of 7 practices and all of them reported completing the survey on their own behalf.

USER DESCRIPTION

<table>
<thead>
<tr>
<th>GENDER</th>
<th>NUMBER</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>10</td>
<td>59%</td>
</tr>
<tr>
<td>Female</td>
<td>7</td>
<td>41%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AGE GROUP</th>
<th>NUMBER</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>36-45</td>
<td>1</td>
<td>6%</td>
</tr>
<tr>
<td>46-55</td>
<td>8</td>
<td>47%</td>
</tr>
<tr>
<td>56-65</td>
<td>6</td>
<td>35%</td>
</tr>
<tr>
<td>66-75</td>
<td>1</td>
<td>6%</td>
</tr>
<tr>
<td>76-85</td>
<td>1</td>
<td>6%</td>
</tr>
</tbody>
</table>

The majority of project participants (59%) were male. There were no participants in the two youngest age groups, 18-25 and 26-35. Most survey participants were within the two middle age groups, 46-55 and 56-65, with 47% and 35%, respectively. This is representative of the general population where most newly diagnosed T2D patients are between 46 and 65 years of age.
5. PRIMARY QUESTIONS FINDINGS

The project had three primary evaluation questions to determine if participants felt better about managing their condition and if participants using the PEP-T2D app attended their diabetes-related service faster than non-app users.

In order to validate the scale that measures participant perceived self-efficacy, the app asked participants questions about their general ability to manage their diabetes. This was assessed by the 8-item Perceived Diabetes Self-Management Scale (PDSMS). The responses for the PDSMS items range from 1 = “Strongly Disagree” to 5 = “Strongly Agree.” Half of the questions are worded such that high agreement signifies low self-efficacy or perceived competence (questions 1, 2, 6, 7). These four are reverse scored prior to being added to the scores of the other questions. The total PDSMS score can range from 8 to 40, with higher scores indicating more confidence in diabetes self-management. [17]

The table below shows how many participants ticked a score from 1 to 5 for each question. Reverse scored questions are boxed.

<table>
<thead>
<tr>
<th>SCORE</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is difficult for me to find effective solutions for problems that occur with managing my diabetes</td>
<td>5</td>
<td>4</td>
<td>7</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>I find efforts to change things I don’t like about my diabetes are ineffective</td>
<td>3</td>
<td>4</td>
<td>9</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>I handle myself well with respect to my diabetes</td>
<td>0</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>I am able to manage things related to my diabetes as well as most other people</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>I succeed in the projects I undertake to manage my diabetes</td>
<td>0</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Typically, my plans for managing my diabetes don’t work out well</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>No matter how hard I try, managing my diabetes doesn’t turn out the way I would like</td>
<td>2</td>
<td>8</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>I’m generally able to accomplish my goals with respect to managing my diabetes</td>
<td>0</td>
<td>6</td>
<td>2</td>
<td>7</td>
<td>2</td>
</tr>
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HAS THERE BEEN A CHANGE IN PERCEIVED SELF-EFFICACY SCORES OVER TIME?

Individual personal self-efficacy scores:

<table>
<thead>
<tr>
<th>PARTICIPANT</th>
<th>START</th>
<th>FINISH</th>
<th>CHANGE</th>
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<tbody>
<tr>
<td>1</td>
<td>24</td>
<td>27</td>
<td>+</td>
</tr>
<tr>
<td>2</td>
<td>25</td>
<td>35</td>
<td>+</td>
</tr>
<tr>
<td>3</td>
<td>35</td>
<td>30</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>34</td>
<td>29</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>13</td>
<td>22</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>23</td>
<td>33</td>
<td>+</td>
</tr>
<tr>
<td>7</td>
<td>27</td>
<td>33</td>
<td>+</td>
</tr>
<tr>
<td>8</td>
<td>37</td>
<td>40</td>
<td>+</td>
</tr>
<tr>
<td>9</td>
<td>28</td>
<td>31</td>
<td>+</td>
</tr>
<tr>
<td>10</td>
<td>21</td>
<td>20</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>11</td>
<td>24</td>
<td>+</td>
</tr>
<tr>
<td>12</td>
<td>25</td>
<td>25</td>
<td>=</td>
</tr>
<tr>
<td>13</td>
<td>32</td>
<td>27</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>29</td>
<td>22</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>20</td>
<td>18</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>30</td>
<td>33</td>
<td>+</td>
</tr>
<tr>
<td>17</td>
<td>22</td>
<td>16</td>
<td>-</td>
</tr>
</tbody>
</table>

Increase 8 47%
Decrease 8 47%
No change 1 6%

<table>
<thead>
<tr>
<th>BEFORE APP USE</th>
<th>AFTER APP USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>25.65</td>
</tr>
<tr>
<td>Variance</td>
<td>50.99</td>
</tr>
<tr>
<td>Range</td>
<td>11 to 37</td>
</tr>
<tr>
<td>Median</td>
<td>25</td>
</tr>
<tr>
<td>P value</td>
<td>0.282</td>
</tr>
</tbody>
</table>

The personal self-efficacy scores were collected at two time points: immediately after registration and after 16 weeks.

Typical scores in a population are 27-29, with confidence indicated above that score, and lower scores indicating a person that is not confident.

Overall, there was no real difference to personal self-efficacy scores, as they were equally split between positive and negative changes, at 47% each, and 6% reported no change. There was a slight increase in mean and range of scores, however this was not statistically significant.
HAS THERE BEEN A CHANGE IN THE NUMBER AND PERCENTAGE OF ATTENDED DIABETES-RELATED SERVICES?

<table>
<thead>
<tr>
<th>DESMOND COURSES</th>
<th>APP</th>
<th>CNTL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance numbers</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Attendance percentage</td>
<td>65%</td>
<td>71%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EYE EXAMS</th>
<th>APP</th>
<th>CNTL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance numbers</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>Attendance percentage</td>
<td>65%</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FOOT EXAMS</th>
<th>APP</th>
<th>CNTL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance numbers</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>Attendance percentage</td>
<td>82%</td>
<td>100%</td>
</tr>
</tbody>
</table>

For this question, we compared the participants to baseline data covering the same calendar months from the previous year. This comprised patients newly diagnosed with T2D within the clinics, but who were not offered the PEP-T2D app.

There was no notable change in attendance rates.

HAS THERE BEEN A CHANGE IN THE TIME ELAPSED BETWEEN DIAGNOSIS AND ATTENDED DIABETES-RELATED SERVICES?

<table>
<thead>
<tr>
<th></th>
<th>MEAN (DAYS)</th>
<th>NO. OF DATA POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESMOND COURSES</td>
<td>Users 91</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Control 111</td>
<td>6</td>
</tr>
<tr>
<td>EYE EXAMS</td>
<td>Users 85</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Control 182</td>
<td>14</td>
</tr>
<tr>
<td>FOOT EXAMS</td>
<td>Users 68</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Control 200</td>
<td>16</td>
</tr>
</tbody>
</table>

Newly diagnosed patients are expected to have both an eye and foot exam in the 3 months (90 days) after diagnosis. A simple comparison of numbers indicates that participants attended all three of the diabetes-related services in less time, in days, after diagnosis than non-app users.

However, due to the large variance in time between diagnosis and attendance, and the very small sample size, the differences observed are not statistically significant. The small sample size was further diminished by data validity issues.
6. SECONDARY QUESTIONS FINDINGS

The secondary questions addressed the utility of the PEP-T2D app, based on participant comments and looking for any associations between confidence and support activities offered by the app.

The support activities are offered through 7 different types of interactions within the app. These are Articles, Self-care, Agenda check in, Tutorials, Videos, Action plans, and an Agenda book. These are described in Appendix 3.

IS THERE A CORRELATION BETWEEN SELF-REPORTED ACTIVITIES VS. RECORDED ATTENDANCE?

The rationale for this functionality in the app is that recording intention is more likely to lead to that particular action.

<table>
<thead>
<tr>
<th>USER</th>
<th>CONFIDENCE LEVEL</th>
<th>INTENDED ATTENDANCE</th>
<th>BOOKED ATTENDANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>education</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>education</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>eye exam</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>eye exam</td>
<td>No</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>foot exam</td>
<td>Yes</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>education</td>
<td>No</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>education</td>
<td>No</td>
</tr>
<tr>
<td>8</td>
<td>3</td>
<td>eye exam</td>
<td>No</td>
</tr>
<tr>
<td>9</td>
<td>5</td>
<td>education</td>
<td>No</td>
</tr>
<tr>
<td>10</td>
<td>5</td>
<td>education</td>
<td>No</td>
</tr>
<tr>
<td>11</td>
<td>5</td>
<td>eye exam</td>
<td>Yes</td>
</tr>
<tr>
<td>NA</td>
<td>NA</td>
<td>education</td>
<td>No</td>
</tr>
<tr>
<td>NA</td>
<td>2</td>
<td>eye exam</td>
<td>No</td>
</tr>
<tr>
<td>NA</td>
<td>foot exam</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

11 participants used the agenda activity in the app to record their intention to attend at least one diabetes-related service (education, eye exam, foot exam) and 6 participants reported booking a service.

The majority (14/21, 67%) of the recorded intentions had confidence levels of 4 or 5 with respect to attending one of the diabetes-related services. Of these, 6 (43%) were converted into reported bookings to attend. This figure is lower than the GP-recorded figures of 65%, 65%, and 82% attendance for education, eye exam, foot exam (respectively, section 4.2.2) within the time period of the project.

So, there did not appear to be a correlation between intention and action.
WHAT ARE PATIENT PERCEPTIONS ABOUT THE VALUE OF THE PEP-T2D APP?

The participants were asked yes/no questions and offered the opportunity to enter supporting comments.

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the Ayogo app been helpful?</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>Has the Ayogo app been challenging?</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>Has using the Ayogo app changed the way in which you live your life/the</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>person you are representing live their life?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No participants found the interface challenging (94%), with one participant responding ‘Yes’, but explaining

‘To use no, but the articles do challenge any pre-conceived I had’. 8 participants made comments, 4 of them describing the app as ‘easy’ or ‘straightforward’.

88% of participants found it helpful, with 11 making comments. 6 comments were positive about the information being helpful, 4 comments stated that the information was average, and 1 comment was about not using the app enough. One of the positive comments stated,

‘The articles explain the effects of type 2 diabetes in greater detail than the nurse Has time to’.

Most participants (77%) did not think it made living with diabetes easier. There were 7/9 comments about the app being helpful, with 2 of those specifying that the app was complementary to other information sources.

The next table shows how many participants picked a score from 1 to 5 (disagree to agree) for each question.

<table>
<thead>
<tr>
<th>SCORE</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have been able to ask my/the nurse any questions I have about the Ayogo app</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I have been able to ask my/the GP any questions I have about the Ayogo app</td>
<td>4</td>
<td>2</td>
<td>7</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>The Ayogo app has made living with diabetes easier</td>
<td>0</td>
<td>4</td>
<td>9</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>The Ayogo app has been convenient for me</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>The Ayogo app has had a positive impact on how I live my life/person I am representing live their life</td>
<td>0</td>
<td>4</td>
<td>7</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>
65% of participants (11/17) rated that it had no positive impact on their lives, with an even, neutral spread concerning life being made easier. Twice as many participants scored the app as being convenient (8 compared to 4). Comments were generally about content limitations.

77% (13/17) of participants would recommend the app to family and friends.

**WHAT WERE UTILISATION PATTERNS OF THE PEP-T2D APP?**

<table>
<thead>
<tr>
<th>TASK TYPE</th>
<th>NO. TASKS COMPLETED (AGGREGATED USERS)</th>
<th>NO. TASKS COMPLETED (PARTICIPANTS)</th>
<th>% TASKS COMPLETED (PARTICIPANTS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Article</td>
<td>980</td>
<td>183</td>
<td>19%</td>
</tr>
<tr>
<td>Self-care</td>
<td>201</td>
<td>51</td>
<td>25%</td>
</tr>
<tr>
<td>Agenda check in</td>
<td>80</td>
<td>32</td>
<td>40%</td>
</tr>
<tr>
<td>Tutorial</td>
<td>76</td>
<td>16</td>
<td>21%</td>
</tr>
<tr>
<td>Video</td>
<td>38</td>
<td>9</td>
<td>24%</td>
</tr>
<tr>
<td>Action plan</td>
<td>7</td>
<td>2</td>
<td>29%</td>
</tr>
<tr>
<td>Agenda book</td>
<td>3</td>
<td>1</td>
<td>33%</td>
</tr>
</tbody>
</table>

Articles about diabetes and self-care pages were most often accessed by all app users (980 and 201 times, respectively), with a similar observation for the participant cohort. In terms of task completion by participants, agenda check in and booking were most used, 40% and 33% respectively.

Further information was recorded for two of the app support tasks: self-care and action plans.

<table>
<thead>
<tr>
<th>USER</th>
<th>COMPLETED SELF-CARE QUIZZES</th>
<th>TOTAL SELF-CARE SCORE</th>
<th>MAX SELF-CARE SCORE</th>
<th>% SELF-CARE SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>9</td>
<td>12</td>
<td>75%</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>100%</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>6</td>
<td>6</td>
<td>100%</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>12</td>
<td>12</td>
<td>100%</td>
</tr>
<tr>
<td>5</td>
<td>8</td>
<td>9</td>
<td>24</td>
<td>38%</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>7</td>
<td>9</td>
<td>78%</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>100%</td>
</tr>
<tr>
<td>8</td>
<td>6</td>
<td>6</td>
<td>18</td>
<td>33%</td>
</tr>
<tr>
<td>9</td>
<td>6</td>
<td>14</td>
<td>18</td>
<td>78%</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>50%</td>
</tr>
<tr>
<td>11</td>
<td>14</td>
<td>32</td>
<td>42</td>
<td>76%</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>100%</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>0%</td>
</tr>
<tr>
<td>14</td>
<td>8</td>
<td>16</td>
<td>24</td>
<td>67%</td>
</tr>
<tr>
<td>15</td>
<td>3</td>
<td>7</td>
<td>9</td>
<td>78%</td>
</tr>
</tbody>
</table>

Of the 15 participants to complete at least 1 self-care quiz, 10 scored 75% or higher indicating that most of them had a good understanding of their diabetes.
Furthermore, the 5 participants who accessed actions plans noted a range of actions: more activity, eating better and losing weight. 2 survey participants were specifically interested in eating better and exercising to affect their diet.

Overall, the participants appeared to have good access to information and were already confident about their diabetes.

WHICH FEATURES OF THE PEP-T2D APP WERE USEFUL; HOW COULD IT BE IMPROVED?

Articles about diabetes and self-care were most often accessed, followed by use of the agenda function. Most free text comments from participants concerned the information content and were generally positive. There were no comments specific to the videos and tutorials.

Negative comments were focussed on the limited amount of information content and one participant suggested better optimised presentation of the cards, pages containing content and actions about a single subject, as they did not seem relevant to their situation.

Interestingly, 2 participants completed the survey without undertaking any self-care tasks.
7. CONCLUSIONS

There were no statistical differences between the participant and control groups on any of the parameters measured as the sample size in the project was very small.

The app did not have a statistically significant effect on the number of newly diagnosed T2D patients attending diabetes-related health services as directed by their GP surgeries. There was also no statistically significant effect on the length of time between diagnosis and attendance. Changes to user perceived self-efficacy scores effectively did not change notably across the evaluation cohort after use of the app.

However, for the three primary metrics, the data was generally neutral or slightly positive. This is a weak indicator that the behavioural concepts that are the basis for the PEP-T2D app do not generate an adverse reaction affect a UK population.

In terms of uptake, 73% of potential participants that were offered the app said yes and onboarded and of those, 93% used it more than once. Although patient process metrics (uptake, engagement, and completion) have been defined in different ways by other apps of web-based diabetes support programmes, so are not directly comparable, the uptake was reported as >70% for OurPath and Oviva. [14]

For future studies, it will be helpful to how many patients are signed up to such apps directly at the GP surgery, for example from an available tablet in this project, compared to at home.

Overall, participants had a positive experience of the PEP-T2D app and most would recommend it to their friends and family. Many of the comments for improvement can be linked to the app being a Minimum Viable Product intended to demonstrate the concept in a UK context. Specific suggested improvements included more information and presenting cards in more logical manner early in process. It is important to note that there was approximately 16 weeks of content in the app and some patients would have gone through quicker, while others slower.

An overwhelming number of participants did not think that the app was challenging. However, the question may have been too ambiguous as the comments indicated that participants interpreted this question in different ways. That is, some understood the question to mean ‘challenging preconceptions’ as opposed to others responding to ‘challenging usability’. Future studies should ask ‘Was it difficult to use this app?’

The purpose of this study was to test the feasibility of the first UK application of Bandura’s self-efficacy concept to a T2D app. The lack of negative response in a UK cohort to an app whose underpinnings have been tested in other countries, the high repeat usage rate, and positive feedback indicate that further development of the PEP-T2D app for the UK is warranted.
REFERENCES

Patient Engagement Pilot for Type 2 Diabetes (PEP-T2D)

**A CONTEXT**

- People are generally living longer and, as a result, a growing number are suffering from complex long-term health conditions. The way that our population is interacting with healthcare is also evolving as internet and digital health use grows across all age groups. Two thirds of the national population own smartphones, and off-the-shelf health apps are increasing in popularity.

- There is a consensus for an increasing role of technology to empower patients to help them to develop knowledge, skills and confidence to manage their health.

- The Hampshire and Isle of Wight (HRoW) STP is interested in developing the provision of digital interventions to support its population in managing long-term health conditions such as Type 2 Diabetes (T2D).

- This pilot aims to provide a proof of concept and gain a better understanding of the ability of a smartphone app (Ayogo-T2D) to affect behaviour change and uptake of publicly funded programs all newly diagnosed T2D patients should attend. This includes: Desmon (structured T2D education); Diabetic Eye Screening; and, Annual Foot Check.

**B INPUTS**

**Priorities**
- Usage of Ayogo-T2D app
- Uptake of Desmon (total and time)
- Uptake of eye tests (total and time)
- Uptake of foot exams (total and time)
- Perceived Self-efficacy (PSE) Scores

**Resources**
- HCPs (GPs, nurses)
- Eye screening centres
- Desmon providers
- Foot check centres
- Patient records
- National Diabetes Audit
- NICE/QofG Guidelines
- National Diabetes Foot Care Audit
- Patent Reported Data

**Partners**
- PPI groups
- Patients
- Commissioners
- HCPs (GPs, nurses)
- Ayogo
- Wessex AHSN
- Various public resources

**C ACTIVITIES**

**Enabling activities**
- Selection criteria for patient identification (enrolled, non-enrolled, excluded)
- Manage Information Governance (GDPR)
- Patient Consent (information and forms)
- Access to de-identified administrative and clinical records
- Privacy Impact Assessment

**Activities with deliverables**
- Development of Ayogo-T2D app
- Selection of newly diagnosed T2D patients
- Clinical referrals of patients to Ayogo-T2D app and downloading/on-boarding
- Usage of Ayogo-T2D app for duration of pilot
- Requests for patient and HCP (doctors, nurses) feedback (e.g. surveys, focus groups)

**D OUTPUTS**

**Creating the following**

**Outputs**
- Change in perceived Self-efficacy Scores over time
- Change in number and timeliness of completed Desmon, diabetes eye & foot checks
- Comparison of self-reported activity vs. recorded attendance
- Change in HCP perceptions about value of Ayogo-T2D
- Description of Ayogo-T2D app usage in patient pathway

**E OUTCOMES**

**To deliver the following**

**Outcomes**
- Better control of newly diagnosed T2D
- Increased patient engagement of self-management
- Better use of NHS commissioning resources (Desmon, Eye Screening, Foot Checks)
- Defined feedback for improving Ayogo-T2D in next iteration for broader deployment
- Improved understanding of role of apps in T2D pathway

**F IMPACTS**

**With these**

**Long-term Impacts**
- Healthier populations with fewer complications (e.g. blindness, amputations)
- More efficient use of NHS resources
- Enhanced patient experience
- Effective application of digital interventions in T2D primary care pathways
APPENDIX 2 – PARTICIPANT SURVEY

Study Title: Patient Engagement Pilot for Type 2 Diabetes (PEP-T2D)

Screening questions 1-2 (Only respondents who answer yes to these questions will be able to proceed with the questionnaire).

1. Are you aged 18 years and over?
   □ Yes
   □ No

2. Have you used the Ayogo App (also known as My Diabetes Buddy) at least once?
   □ Yes
   □ No

3. Are you completing this questionnaire on behalf of?
   □ Myself
   □ Someone else

4. How would you describe your gender /the gender of the person you are representing?
   □ Female
   □ Male
   □ Other

5. Please indicate your age/ the age of the person you are representing from the following age classification boxes
   □ 18-25
   □ 26-35
   □ 36-45
   □ 46-55
   □ 56-65
   □ 66-75
   □ 76-85
   □ 86-90
   □ 91+
6. Where did you learn about the Ayogo App?
   - [ ] Badgerswood & Forest Surgeries, Bordon
   - [ ] Pinehill Surgery, Bordon
   - [ ] The Grange Surgery, Petersfield
   - [ ] The Swan Surgery, Petersfield
   - [ ] The Whiteley Surgery, Fareham
   - [ ] The Highlands Practice, Fareham

7. Has the Ayogo App been helpful?
   - [ ] Yes
   - [ ] No

   Please explain your answer

8. Has the Ayogo App been challenging?
   - [ ] Yes
   - [ ] No

   Please explain your answer
9. Has using the Ayogo App changed the way in which you live your life/the person you are representing live their life?
   - Yes
   - No

Please explain your answer

10. To what extent do you agree with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Score (indicate one box)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• I have been able to ask my/the Nurse any questions I have about the Ayogo App</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>• I have been able to ask my/the GP any questions I have about the Ayogo App</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>• The Ayogo App has made living with diabetes easier</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>• The Ayogo App has been convenient for me</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>• The Ayogo App has had a positive impact on how I live my life /person I am representing live their life</td>
<td>1 2 3 4 5</td>
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11. Are there any ways the Ayogo App could be improved in the future?

12. Do you have any other comments about the Ayogo App?
13. Would you recommend the Ayogo App to your family and friends?

☐ Yes

☐ No

14. Have you completed this questionnaire before?

☐ Yes

☐ No

Thank you for your participation
APPENDIX 3 – DESCRIPTION OF IN-APP SUPPORT ACTIVITIES

ARTICLE
Written content about diabetes (from Diabetes UK)

SELF-CARE
Reminders of healthy habits, management tasks or lifestyle skills to build

AGENDA CHECK IN
Walking through patient intentions & barriers, breaking down agenda tasks into steps, connecting patients to existing services

TUTORIAL
About how to use the app

VIDEO
Video content about diabetes

ACTION PLAN
Content walking the participant through from creating an action plan, then checking in to see if they did it

AGENDA BOOK
A flow that checks in to see if participants have followed steps to book onto DESMOND education, eye or foot exams
## VERSION CONTROL

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<th>Status</th>
<th>Key Changes</th>
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