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Enhancing type 2 diabetes treatment through digital plans of care. Patterns of access to a care-planning app over the first 3 months of a digital health intervention

The increasing digitalization of healthcare brings opportunities to enable much greater patient access to evidence-based interventions [1,2]. A key question is the degree to which patients with long-term conditions such as type 2 diabetes (T2DM) will access an app that supports them in day-to-day management.

We recently investigated how a personalized care-planning software and patient-facing mobile app may aid people to manage their diabetes more effectively [3].

People with T2DM with glycosylated haemoglobin greater than 58 mmol/mol (7.5%) were randomized (randomized controlled trial) to either the active intervention group (usual care + app) or the control group (usual care). The intervention group received a co-created personalized care plan involving daily lifestyle prompts and access to a range of resources. Randomization did not influence other decisions about diabetes management [3,4].

The participant age range was 19×85 years. The mean age of the T2DM participants was 63.2 years. Out of a total of 203 participants, 118 (58%) were male, 68 (33.5%) were female and 17 (8.5%) did not report their sex. The treatment group (app + usual care) and control (usual care) groups constituted 114 and 89 participants respectively.

Analysis of access to the app indicated that 30% of users used the app at least 10 times in the first month of app access, dropping to 20% in the second month. Of those accessing ≥10 times in the first month, one-third of them also used it ≥10 times in the following month and 81% used it more than twice; 84% of participants accessed the app at least twice in the first month after enrolment in the study.

In the first month, the average total number of sessions was 8.06 sessions, and the average total time spent in the app was 36.60 min. App usage in the first 3 months

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is shown in Fig. 1a: average time spent in the app/month over the 3 months following activation (point of recruitment) and Fig. 1b shows the average app usage/month in the 3 months after activation in terms of session number and average duration of sessions.

The length of time patients within the trial had been living with T2DM was between 1 and 42 years. Usage was highest in the group of app users who had been diagnosed with T2DM 11–20 years previously, spending an average total time of 54.5 min in the app in month 1 after download. There was no significant variation in app usage by sex. All users used the app in the first month following enrolment in the study (if in the intervention group arm); 47.6% used it in the second month and 31.4% used it in the third month.

Engagement with different functions within the app led to higher usage, including resources/tracking. Users who viewed between 51 and 60 resources spent 80.9 min within the app in the first month after activation, whereas users who only viewed 0–10 resources spent 19.2 min. This was also the case for app users using the tracking function within the app: specifically, the more times a user tracked something, the higher the total time they spent in the app in the first month ($r^2 = 0.85$).

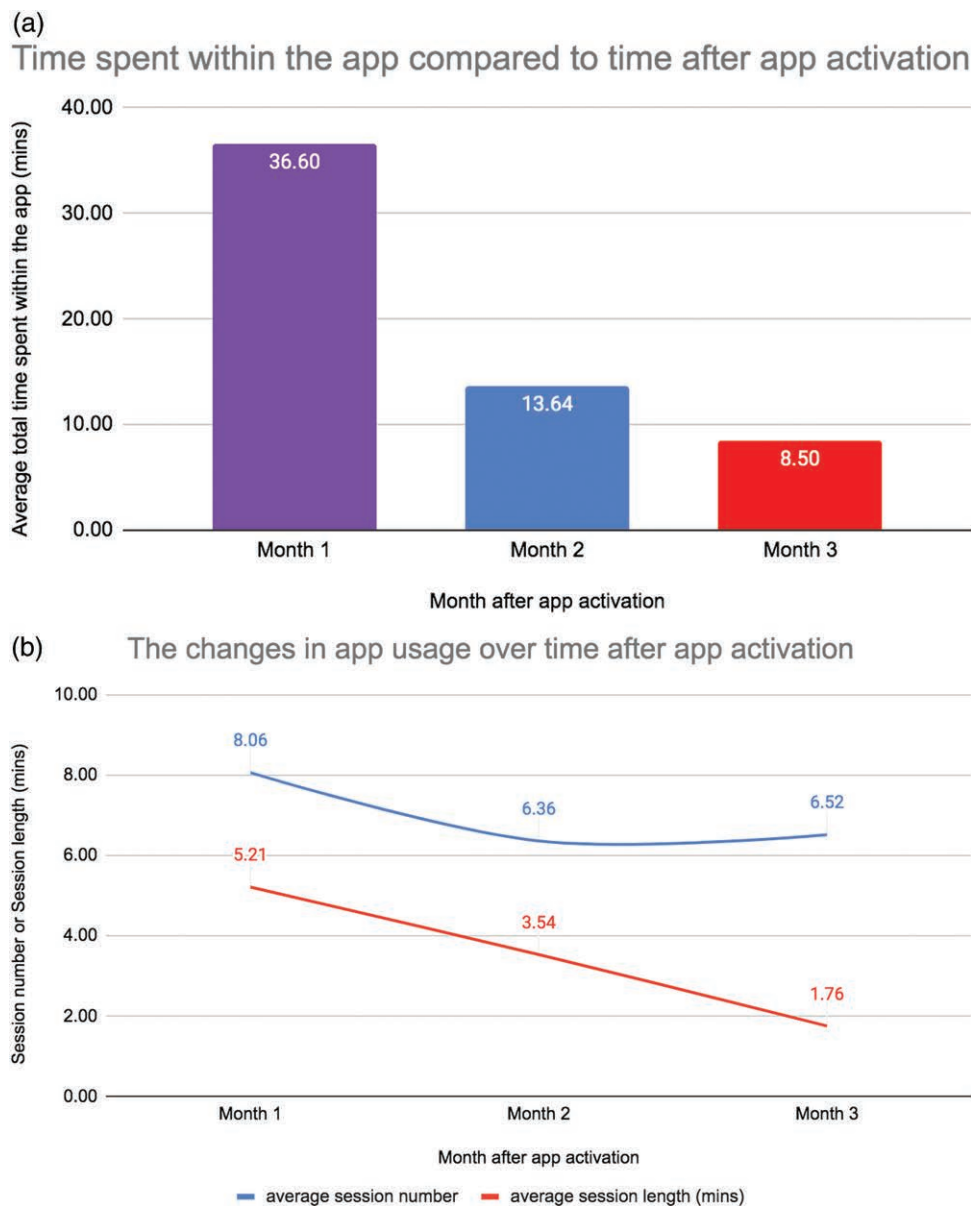
The age group who used the app the most were those aged 61–70 years old, (average total number of app sessions for these individuals over the 3-month trial = 15), the average total time spent within the app in the first month being 47.7 min. Although the average time spent within the app in the first month was lower for those patients aged 41–50 years old (15.3 min), their app usage diminished less over time.

In relation to the fact that users accessed the app less over time, it has been shown that medical apps have a 90-day retention of 34% and annual retention of 16% [5].

It was found in 2020 that 65% of those over 65 are using smartphones, an increase of 26% since 2016. While more people are using smartphones, those over 65 are still the least likely age group to have a smartphone [6]. It is also relevant

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Fig. 1



(a) Average time spent in the app/month over the 3 months following activation (point of recruitment). (b) Average app usage/month in the 3 months after activation in terms of session number and average duration of session.

to state that retrospective studies in T1DM have identified increasing age as a potential correlate of poorer engagement with diabetes technologies and worse outcomes [7].

The relation between app usage and age/duration of diabetes provides essential insights to improve content [4], so as to enhance the usage of digital support technology for diabetes/other long-term conditions, as well detailed evaluation of the patient experience. Any improvement in blood, glucose control, if sustained will have the potential to reduce cardiovascular event rate and cardiovascular mortality rate in the long term in people with [8].

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Conflicts of interest

There are no conflicts of interest.

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