What do adults with type 2 diabetes want from the ‘perfect’ app? Results from the second Diabetes MILES—Australia (MILES-2) study

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Type 2 Diabetes is on the rise

- 425 million, 693 million by 2045
- 95% Type 2 diabetes

Managing Diabetes is difficult

• Self-management is difficult, 24 hours/day or 8760 hours/year.

• Only 6 hours/year with a health professional

99% “on your own”
Diabetes self-management apps can provide additional support

- Improved outcomes in trial settings
  - Meta-analysis of 10 trials and 851 participants
    - ↓Hba1C 0.5%/6mmol/mol
- Greater effect in people with T2D:
  - T2D apps: ↓0.8%/9mmol/mol
  - T1D apps: ↓0.3%/3mmol/mol

Global Market trends for Diabetes Apps show very low adoption

- Effective apps not accessible on app stores
- Majority of the apps that are available are not evidence based
- Out of over 1800 diabetes-specific apps on the market, only 1% are used

Australian Context: diabetes apps not useful

• Only 8% of people with T2D in Australia use apps

• Apps that are used are often not diabetes specific. ¹

• Current diabetes specific apps are not helpful.

Aim:

To investigate what Australian adults with type 2 diabetes want from the ‘perfect’ diabetes self-management app.
Methods:

• MILES2: National online cross-sectional survey (2016)
• Adults with T2D
• Open-ended question: ‘If you were describing the perfect app to help you manage your diabetes, what would it do?’
• Thematic analysis of responses
Results: Sample characteristics by response type

• 1264 participants with T2D took part in MILES2
  • 339 provided usable responses
  • 45% female
  • Age 58±10 years
  • Diabetes duration 10±7 years
  • Self reported HbA1c 7.3±2.0 (56±44) %/ (mmol/mol)
  • 45% insulin treated, 55% not on insulin
  • 14% currently using apps
    • Those that did not provide a usable response were older compared to those who did
Results

• Theme 1: Assistance with practical aspects: reducing the cognitive burden

• Theme 2: Assistance with psychological aspects: reducing the emotional burden
Theme 1: Practical aspects

a) Tracking data

- Comprehensiveness and continuity
  - Track “as much as possible” “over a long period of time e.g. 1-2 years. “
  - “visual graphs to show management within and outside of normal range”
  - “present information in a dashboard for overall view”

- Visualisation

- Personalisation
  - “write notes against each of the (BG) readings to have a record of why levels were high/low”
Theme 1: Practical aspects

b) Linking and sharing of data

• Linking devices for automating uploading

“it would be able to measure and record [glucose] seamlessly without needed to enter it [manually].”

“interfaces wirelessly to [a] blood glucose meter”

• Sharing data e.g. with HP’s

“have the option to link [the data] with [a] general practitioner, endocrinologist or diabetes educator, so a health professional could give feedback and suggestions on results”. 
Theme 1: Practical aspects

c) Automated coaching

- Recommend specific actions based on personal data
- Differences in coaching preferences
  - Self-directed coaching
  - Directive coaching

“it would monitor your intake whatever it may be and inform you of what you could eat for the remainder of the day, including taking into account your exercise”.

“I could set goals, and the app could give me ideas on how to reach those goals.”

Tell me “exactly what to eat and do”
Theme 1: Practical aspects

d) Reminders and alarms

• Daily self-care reminders

• Alarms for Hypos and Hypers
  • Hypos – insulin treated
  • Hypers – non-insulin treated

"remind me to do the blood sugars, remind me when to inject insulin and the dose" and about "diet and exercise."

"warn [me] about [going] too high or too low"
Theme 2: Psychological aspects

a) Ongoing encouragement and motivation

• Encouragement

  “through the day to exercise and move and choose the right food to make [me] feel [my] best”

• Motivation

  “some type of visual reward....a happy face sticker or mini-game to reward you for recording each day... Incentive plus positive reinforcement. “

• Self-efficacy

  “less dependent on other people” and “take charge of [my] life.”

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Theme 2: Psychological aspects

b) Coping

• Managing expectations

“Accept that once in a while I might have a piece of honey toast, which really puts the [glucose] reading up but accept that it is a one-off situation.”

• Managing guilt and stress

“understand and suggest hints during times of stress”

being able to eat “a special treat...with less guilt”.

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Implications

• Data tracking important for ‘sense-making’ and seeing the bigger picture.
• People with T2D may want a CGM – device versus app?
• Individual differences in preferences may be influenced by management styles (self-directed versus directive).
• Links with HP’s desired but difficult to achieve.
• Ongoing psychological support: encouragement, motivation and help with coping is an unmet need.
Conclusions

• Needs of people living with diabetes should be accounted for
• Valuable support through useful features
• Different features for different users
• The ‘perfect app’ should reduce the practical, cognitive and emotional burden of diabetes self-management.
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