

# The OnTrack Diabetes Program: An Automated Online Intervention For Type 2 Diabetes & Dysphoria Management

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Type 2 Diabetes is an urgent global and national health priority...

- An estimated 1.5 million Australians are affected.
- Long-term hyperglycemia leads to complications & mortality. 50% of Australians have sub-optimal glycemic control.
- Glycemic control is strongly related to diabetes self-management.
- Essential self-management entails: physical activity, balanced nutrition, blood glucose self-monitoring, medications (for the majority).
- Regular, ongoing, long-term support is needed. Personal & systemic barriers, including health system limitations in rural areas, prevent this.

Online intervention is a possible solution.

Benefits include: high acceptability, accessibility, usability, 24-hour availability, anonymity and cost-effectiveness.

## What can help get Type 2 diabetes on track?

### Aims

1. Explore views of people with T2D and General Practitioners on T2D management experiences & perceived needs for support.
2. Develop the OnTrack Diabetes program based on data obtained.
3. a) Evaluate effectiveness of the OnTrack Diabetes program in improving clinical, emotional, behavioural, and psychosocial outcomes in people with Type 2 diabetes.  
b) Evaluate acceptability, usability, utility, implementation feasibility and cost-effectiveness of OnTrack Diabetes.

### Methodology

Study 1. Qualitative, semi-structured interviews

### Who?

(a) People with T2D, 18-75y, living in Brisbane

(b) GPs in Brisbane treating T2D

### Interviews explored:

- Enablers & barriers to effective T2D self-care
  - Emotional challenges & contexts
  - Perceived needs for T2D self-management support
  - Suggestions for program inclusions/features to increase GP referrals
- Grounded theory methodology was used.

### Study 2. Qualitative interview feedback on OnTrack Diabetes.

Sample: N=10; people with T2D, 18-75y, living in Brisbane (n=5), & health care professionals treating T2D in Brisbane (n=5).

Primary Outcomes: Usability, utility, & acceptability of program content.

### Study 3. Main trial of OnTrack Diabetes.

Design: Randomised controlled trial; cross sectional (additive first 3 mo).

- Baseline, 3-, 6-, & 12- month follow-ups

Sample: N = 300 Selection criteria: T2D ≥3 mo, 18-75y, living in Australia, stable T2D med dose ≥3 mo & type ≥4 wks, no steroid meds, not pregnant, no mental condition other than depression/ anxiety, regular computer/ internet access, contactable by phone, ≥grade 5-level English.

Primary Outcomes: HbA1c; dysphoria/ diabetes-specific distress

Secondary Outcomes: Weight, waist measure; T2D self-care, physical activity, nutrition; self efficacy for diabetes self-care; health-related quality of life.

Conditions: (i)Information-Full (I-F)- Information only (3 mo) then full program (3 mo);

(ii)Monitoring-Full (M-F)- Monitoring tools + Initial motivation enhancement (3 mo) then full program (3 mo); & (iii)Full-Full (F-F)- Full program access (6 mo).

Hypotheses: (1) Months 0-3: Improvements in HbA1c, dysphoria, diabetes self-care, self-efficacy, & HR-QoL will be greatest in F-F, then M-F, then I-F. Perceived usability, acceptability, & satisfaction will parallel these outcomes; (2) Months 6 & 12: Compared with baseline, I-F & M-F will have similar outcomes to F-F; & (3) Months 0-6: Cost-effectiveness will decrease in order from F-F, to M-F, to I-F.



"I would refer patients if they want extra information; if there is a tool that can help motivate them, for example, a tool to calculate energy." (Study 1b GP)

## Results

### Study 1.

(a) N=13 (46% male), mean age=57 (SD=7.8) mean T2D duration=7.23y (SD=3.8).

(b) N=10 (70% male), mean duration treating T2D=13y.

Table 1.

Thematic Content Derived From Qualitative Interviews On Type 2 Diabetes Self-Management

	Study 1a	Study 1b
Enablers to effective T2D self-management	<ol style="list-style-type: none"> <li>1. Self-monitoring- Blood glucose, nutrition, exercise</li> <li>2. Informational support</li> <li>3. Accountability to health professional</li> <li>4. Routine</li> <li>5. Goal-setting</li> <li>6. Positive feedback</li> <li>7. Social support from family &amp; friends</li> <li>8. Holidays</li> </ol>	<ol style="list-style-type: none"> <li>1. Self-monitoring- Blood glucose, clinical parameters</li> <li>2. Informational support</li> <li>3. Regular health professional follow-up</li> <li>4. Presenting poor glycemia consequences</li> <li>5. Identification of barriers and overcoming them; giving reasons to change.</li> </ol>
Barriers to effective T2D self-management	<ol style="list-style-type: none"> <li>1. Eating difficulties – Self-control; restrictions</li> <li>2. Lack of consistent nutrition information</li> <li>3. Functional limitations to physical activity</li> <li>4. Medication issues-Side effects, fear of commencement</li> <li>5. Stress</li> <li>6. Fitting in Type 2 diabetes self-care</li> <li>7. Chronicity→ Motivation lapse</li> </ol>	<ol style="list-style-type: none"> <li>1. Boundaries/ restrictions</li> <li>2. Lack of consistent nutrition information.</li> <li>3. Functional limitations to physical activity</li> <li>4. Medication issues – reluctance to commence</li> <li>5. Complexity of treatment regime – "Fitting in" Type 2 diabetes self-care</li> </ol>
Emotional challenges related to Type 2 diabetes	<ol style="list-style-type: none"> <li>1. Fear – Initial diagnosis, chronicity, medications, prognosis</li> <li>2. Worry/Anxiety – Fluctuating glycemia, uncertainty, boundaries, going on insulin</li> <li>3. Depression – Complications, helplessness</li> <li>4. Frustration – "Constant battle", loss of control/ independence</li> </ol>	<ol style="list-style-type: none"> <li>1. Grief – Complications</li> <li>2. Worry/Anxiety- Going on insulin, prognosis</li> <li>3. Fear – Threat of boundaries</li> </ol>

Table 2.

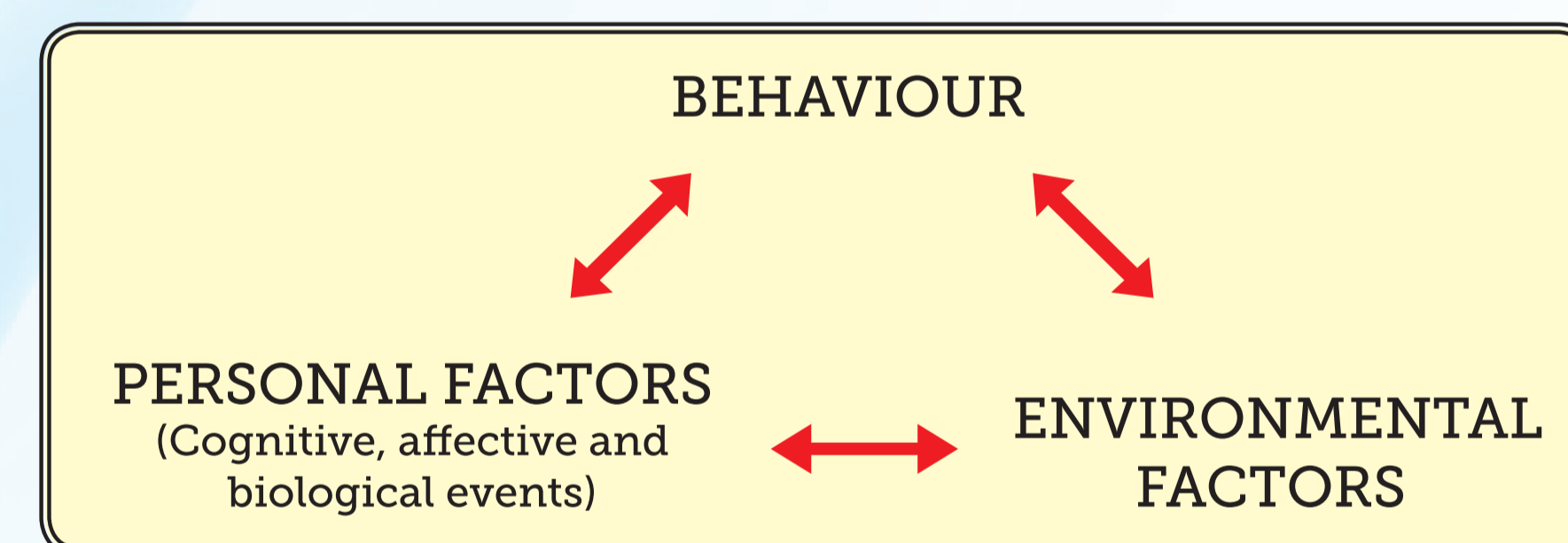
Suggestions For Online Type 2 Diabetes Support Program Components

Study 1a	Study 1b
<ol style="list-style-type: none"> <li>1. Informational support - Nutrition, medications, physical activity, general Type 2 diabetes</li> <li>2. Monitoring tools - Blood glucose, HbA1c, diet, exercise</li> <li>3. Motivational support                             <ul style="list-style-type: none"> <li>- Feedback on progress towards goals</li> <li>- Help with "the psychology of it"</li> </ul> </li> <li>4. Emotional support modules</li> <li>5. Social support - Chat room/ forum</li> </ol>	<ol style="list-style-type: none"> <li>1. Informational support - Effects of diabetes on the body, complications, Medication, Foot care, Worksheets</li> <li>2. Monitoring tools - Blood glucose, diet, exercise, weight, clinical parameters</li> <li>3. Motivational support - Exercise suggestions, feedback reinforcement</li> </ol>

"The longer it's unmanageable, the greater the possibility complications will occur and I know I've got to get it right.. that's tough, it's a hard battle everyday." (Study 1a participant)

## The OnTrack Diabetes Program

Based on Social Cognitive Theory (Bandura, 1986)



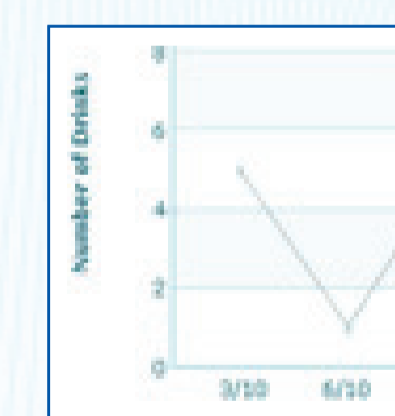
- Cognitive-behavioural skills training – Information resources, Goal-setting, Self-monitoring- Goal attainment scaling, Planning, Problem-solving
- Social-Cognitive motivational support – Implementation intentions, Guided imagery (Elaborated Intrusion Theory of Desire), Mindfulness resources, Self-efficacy tool
- Emotional support – Regular depression, anxiety & distress self-screening & support
- T2D self-management support – Physical activity, Nutrition, Blood glucose, Medication-taking, Building social & health provider support.

### Self-Monitoring



#### My Diary

Physical activity, Eating, Blood glucose goals, & Mood ratings



#### Feedback

"How I'm Doing" Blood glucose & Mood graphs



Program Progress "What I've Done"

### Signposts

All include relevant:

Information resources, Interactive tools & Mindfulness resources

1. Keeping Active & Feeling Great – Fun Activities, Physical Activity
2. Eating Well & Feeling Healthy – Creative food ideas, Saying No, Beating Cravings
3. Health Routines – Reminders – Blood glucose monitoring, Medications & more
4. Keeping OnTrack – Maintaining positive changes

### Conclusions

Results from Study 1 emphasise the need for regular, ongoing emotional & motivational support for optimum well-being in people with Type 2 diabetes. Insight into key areas in which support is required was provided and preliminary endorsement of the program was received from GPs. This data is used to inform the OnTrack Diabetes program.

"I'd use an online support program quite often...for having some guidelines as to how to manage my diabetes... about eating, exercise, and when you're feeling down, how to manage that." (Study 1a participant)