

Brief Digital Solutions in Behavior Change Interventions for Type 2 Diabetes Mellitus: A Literature Review

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Supplemental Table S1. Behaviour change techniques, frequency of use in interventions and intervention content examples

Behaviour change technique	BCCTv1b hierarchical cluster	Frequency	Examples extracted from descriptions of interventions	Studies that included the BCT
1.1: Goal setting (behaviour)	Goals and planning	3	"The app's main registration categories are nutrition (servings a day of fruits, vegetables, nuts, seeds and water, as well as setting goals about avoiding sugared beverages, candy, junk food, or late snacks)..." (HILM)	Capozza Hilmarsdottir Poppe
1.2: Problem solving	Goals and planning	6	"The mobile app comprises 5 modules through which the users can freely navigate.... The option to review potential problems and their solutions is offered in the third module (barrier identification/problem solving)." POPP)	Capozza Gordon Hilmarsdottir Lee Poppe Whittemore
1.3: Goal setting (outcome)	Goals and planning	3	"The app was designed by the SidekickHealth company to help people increase their frequency of healthy behaviors through goal setting..." (HILM)	Hilmarsdottir Lee Poppe
1.4: Action planning	Goals and planning	5	"The intervention provides... biweekly automated phone calls to prompt action plans related to new diabetes health concerns..." (GORD)	Capozza Gordon Lee Poppe Whittemore
1.7: Review outcome goal (s)	Goals and planning	1	"After logging in, the users are asked to what extent they reached the goal set in the previous session (prompting review of behavioral goals)..." (POPP)	Poppe
2.2: Feedback on behaviour	Feedback and monitoring	6	"Patients could enroll in six message protocols in addition to the core educational message stream (Figure 1). These included... Blood pressure monitoring reminders and feedback" (CAPO)	Capozza Gunawardena Hilmarsdottir Kusnanto Lee Poppe
2.3: Self-monitoring of behaviour	Feedback and monitoring	8	"The app was designed by the Sidekick Health company to help people increase their frequency of healthy behaviors through... self-monitoring..." (HILM)	Capozza Gunawardena Hilmarsdottir Kusnanto Lee Poppe Whittemore Xu
2.4: Self-monitoring of outcome(s) of behaviour	Feedback and monitoring	8	"...patients could view their trends over time, make associations between their behaviors and test results..." (CAPO)	Capozza Gunawardena Hilmarsdottir Kusnanto Lee Poppe Whittemore Xu
2.5: Monitoring outcome(s) of behaviour by others without feedback	Feedback and monitoring	5	"Patients self-report FBG values by responding to automated phone calls or SMS messages... The algorithm recognizes hyperglycemic trends and notifies providers	Capozza Kusnanto Lee Poppe Xu

Behaviour change technique	BCCTv1b hierarchical cluster	Frequency	Examples extracted from descriptions of interventions	Studies that included the BCT
			if bimonthly average FBG exceeds 160 mg/dL." (XU)	
2.6: Biofeedback	Feedback and monitoring	6	"The app's main registration categories are nutrition... Users must manually enter their own readings and activities, except for the pedometer" (HILM)	Capozza Hilmarsdottir Kusnanto Lee Poppe Xu
2.7: Feedback on outcome (s) of behaviour	Feedback and monitoring	3	Text message: "Almost there! Just 7 pounds to go to reach your 190 pound goal. Plan out your exercise and meals for the next week..." (CAPO)	Hilmarsdottir Poppe Xu
3.1: Social support	Social support	1	Patients were assigned to one of seven teams based on their geographic region. To foster a sense of competition and community, individual and team scores were posted on leader boards." (KERF)	Kerfoot
4.1: Instruction on how to perform a behaviour	Shaping knowledge	6	"The core message protocol consisted of one text message per day related to diabetes education and health improvement..." (CAPO)	Capozza Gordon Kerfoot Kusnanto Lee Whittemore
4.2: Information about antecedents	Shaping knowledge	3	The core message protocol consisted of one text message per day related to diabetes education and health improvement. For example... "How are you? Feeling stressed about diabetes is normal. Getting support will help you feel better and control glucose. Ask for help when you need it." (CAPO)	Capozza Kusnanto Lee
5.1: Information about health consequences	Natural consequences	2	Example of text message: "Take all of your medicines, even if you feel well. It can be dangerous if you skip them..." (CAPO)	Capozza Kerfoot
5.2: Saliency of consequences	Natural consequences	1	Example of text message: "Exercise is good for you. Did you know that exercising regularly strengthens your heart?" (WHIT)	Whittemore
6.1: Demonstration of the behaviour	Comparison of behaviour	1	"The video encouraged patients to use active communication behaviors showing positive role models overcoming common communication challenges in medical visits." (GORD)	Gordon
7.1: Prompts/cues	Associations	7	"The app will notify the patient six times a day: at 06.00 (breakfast), 09.00 (morning snack), 12.00 (lunch), 15.00 (afternoon snack), 16.00 (physical activity/diabetic foot gymnastics), and 18.00 (dinner). The reminder for the blood sugar check appears once a month starting from the first login." (KUSN)	Capozza Gunawardena Hilmarsdottir Kusnanto Lee Poppe Whittemore
9.1: Credible source	Comparison of outcomes	1	"...participants in the intervention group received regular mobile messages from health care professionals..." (LEE)	Lee
10.10: Reward (outcome)	Reward and threat	2	"At the end of the game, all members of the two teams with the most points in each arm received a \$100 gift certificate to an online store." (KERF)	Kerfoot Hilmarsdottir