

## Previous research on type 2 diabetes prevention interventions

Author and year	Study aim(s) as relevant to the current review	Country	Participants (number and characteristics)	Intervention design and components	Measure(s)	Results	Target behaviours and behaviour change techniques (BCTs)	Study limitations
Wing, Venditti, Jakicic, Polley and Lang (1998)	To test the effectiveness over 2 years of diet, exercise, or a combination of diet and exercise (compared with a no treatment control group) on changes in behaviour and incidence of type 2 diabetes in overweight individuals with parental history of diabetes	USA	<p><b>Target group:</b> people with one or both parents with type 2 diabetes</p> <p><b>Recruitment:</b> Newspaper articles</p> <p><b>DEMOGRAPHICS</b></p> <p><i>Control group:</i> N=40</p> <p><b>Sex:</b> 80% female</p> <p><b>Age:</b> 45.3</p> <p><b>Diet:</b> 2 160 kcal/day</p>	<p>RCT: 4 groups</p> <p>Duration: 2 years, gradually decreasing in intensity</p> <p><i>Control:</i> a self-help manual with information on healthy eating, exercise and behavioural strategies for weight control</p> <p><i>Diet:</i> weekly group meetings (approx. 20 people per group) for the first 6 months, followed by biweekly meetings</p>	<p>Taken at baseline, 6 months, 1 year, 2 years</p> <p><i>Oral glucose tolerance test</i></p> <p><i>Exercise: the Paffenbarger Physical Activity Questionnaire</i></p> <p><i>Dietary intake: the Block Food Frequency measure and Three-day food diaries</i></p>	<p>6 months</p> <p>Participants who received dietary instructions (diet and diet + exercise) reported significant decrease in daily calorie intake (<math>p &lt; 0.001</math>).</p> <p>The groups given exercise instructions (exercise and diet + exercise) increased physical activity (<math>p &lt; 0.001</math>)</p>	<p><b>Target behaviours:</b> diet and physical activity.</p> <p><b>BCTs:</b> T4: prompt intention formation; T5: prompt barrier identification; T7: set graded tasks; T8: provide instruction; T9: model or demonstrate the behaviour; T10: prompt specific</p>	<p><b>Identified by the researcher:</b> poor attendance.</p>

Teachable moments: Potential for behaviour change among people with Type 2 Diabetes and their relatives

			<p><b>Exercise:</b> 795 kcal/week</p> <p><b>Weight:</b> 97.4kg</p> <p><b>BMI:</b> 36</p> <p><b>WHR:</b> 0.9</p> <p><i>Diet group:</i> N=37</p> <p><b>Sex:</b>78% female</p> <p><b>Age:</b> 45</p> <p><b>Diet:</b>2 095 kcal/day</p> <p><b>Exercise:</b> 716 kcal/week</p> <p><b>Weight:</b> 99.6kg</p> <p><b>BMI:</b> 36.1</p> <p><b>WHR:</b> 0.9</p> <p><i>Exercise group:</i> N=37</p> <p><b>Sex:</b>81% female</p> <p><b>Age:</b> 46.4</p> <p><b>Diet:</b>1954 kcal/day</p>	<p>for 6 months, and 2 6-week refresher courses during the second year. The meetings focused on behavioural strategies to modify food intake: provision of plans, goals, self-monitoring; led by a multidisciplinary team</p> <p><i>Exercise:</i> same meeting schedule as the diet group. Each meeting included a lecture on changing exercise behaviour + a 50-60 min walk with a therapist. A second supervised walk was available in the first 10 weeks. Other activities were periodically introduced (aerobics, dancing).</p>	<p>Significant weight loss between conditions (diet=9.1kg, exercise=2.1, diet + exercise = 10.3, control=1.5) (p&lt;0.001)</p> <p>Significant changes in physiological measures, which disappeared after adjusting for weight loss.</p> <p><i>12 months</i></p> <p>Significant difference in attendance between conditions (p&lt;0.02)</p> <p>Changes in diet and exercise were maintained in the relevant groups.</p> <p>Diet group maintained 60% of weight loss at 6</p>	<p>goal setting;</p> <p>T11: prompt review of behavioural goals</p> <p>T12: prompt self-monitoring of behaviour</p> <p>T13: provide feedback on performance</p> <p>T17: prompt practice</p> <p>T18: use follow-up prompts</p> <p>T23: relapse prevention.</p>	
--	--	--	--	---	---	---	--

Teachable moments: Potential for behaviour change among people with Type 2 Diabetes and their relatives

			<p><b>Exercise:</b>801 kcal/week</p> <p><b>Weight:</b> 99.3kg</p> <p><b>BMI:</b> 36</p> <p><b>WHR:</b> 0.9</p> <p><i>Diet + exercise:</i> N=40</p> <p><b>Sex:</b> 77% female</p> <p><b>Age:</b> 46.3</p> <p><b>Diet:</b>1984 kcal/day</p> <p><b>Exercise:</b> 829 kcal/week</p> <p><b>Weight:</b> 98.7kg</p> <p><b>BMI:</b> 35.7</p> <p><b>WHR:</b> 0.9</p>	<p><i>Diet + Exercise:</i> both diet and exercise interventions described above; the meetings were equivalent in frequency in length to the diet and exercise conditions.</p>	<p>months, diet + exercise – 72% which was significantly better weight loss than the other two groups (p&lt;0.0001)</p> <p>No differences in physiological measures</p> <p><i>24 months</i></p> <p>None of the changes were maintained at 2 years. No difference between groups.</p> <p>The diet + exercise group maintained a significant decrease in body weight (-2.5 kg from baseline to 2 year follow up)</p> <p><i>Development of type 2 diabetes</i></p>		
--	--	--	---	---	---	--	--

Teachable moments: Potential for behaviour change among people with Type 2 Diabetes and their relatives

						<p>21 people developed type 2 diabetes: 2 in the control, 10 in diet group, 4 in exercise, 5 in diet+exercise.</p> <p>The strongest predictor of type 2 diabetes was baseline IGT (<math>p &lt; 0.0001</math>).</p> <p>Second strongest predictor was weight loss (<math>p = 0.0026</math>).</p>		
Brekke et al. (2003, 2004, 2005a, 2005b)	To examine the effects of a lifestyle intervention on non-diabetic first-degree relatives of type 2 diabetes patients	Sweden	<p><b>Target group:</b></p> <p>People with two first-degree relatives or one first-degree and one second-degree with type 2 diabetes</p> <p><b>Recruitment:</b></p> <p>through type 2 diabetes from outpatient clinics,</p>	<p>Controlled trial, randomized through minimization on the basis of gender, age, BMI, IGT or IFG</p> <p>Duration: 2 sessions, 1-2 weeks apart + unannounced phone calls every 10 days for 4 months</p> <p>Three groups:</p>	<p><i>Diet</i> (Food frequency questionnaire), <i>Physical activity</i> (Exercise survey question: "How often do you exercise 20 minutes of more?" Likert scale from 1</p>	<p><b>16 week follow-up</b></p> <p><i>Diet</i></p> <p>Energy intake decreased in the diet group (within group significance).</p> <p>No significant changes between intervention groups.</p>	<p><b>Target behaviours:</b></p> <p>diet and physical activity.</p> <p><b>BCTs:</b> T2: provide information on consequences; T4: prompt intention formation; T8: provide</p>	<p><b>Identified by the researchers:</b></p> <p>retrospective measures; no control group at 2-year follow-up; subjective measure of physical activity</p>

Teachable moments: Potential for behaviour change among people with Type 2 Diabetes and their relatives

			<p>using a questionnaire; through adverts in local newspaper</p> <p>N=72</p> <p><b>DEMOGRAPHICS</b></p> <p><b>Diet group</b></p> <p>N=25</p> <p><b>Gender:</b> 10 women, 15 men</p> <p><b>Nicotine users:</b> 8</p> <p><b>Age:</b> M=43.7</p> <p><b>BMI:</b> M=25.3</p> <p><b>Body weight:</b> M=79.2</p> <p><b>Energy:</b> M=2 550 kcal</p> <p><b>Physical activity:</b> median: 220min/week</p> <p><b>Diet + exercise group</b></p> <p>N=25</p>	<p><i>Diet group:</i> theoretical part with a presentation on dietary advice; goal setting, discussion on meal pattern, meal frequency; led by a dietician</p> <p><i>Diet + Exercise group:</i> the same dietary counseling + discussion on the benefits of physical activity; goal setting to increase frequency/intensity of physical activity.</p> <p><i>Control group:</i> a letter informing participants to maintain their lifestyle; control group received a diet lifestyle intervention 1 year later (with less intensive follow-up)</p>	<p>“never” to 7 “every day”)</p> <p><i>Leisure time physical activity</i> (an interview based on the Minnesota leisure time physical activity questionnaire)</p> <p><i>Height, weight, waist circumference, sagittal diameter, oral glucose tolerance test, blood chemistry data</i> (e.g. blood glucose, cholesterol, leptin, plasma insulin).</p>	<p><i>Frequency of exercise</i></p> <p>Increase in group diet + exercise within group (<math>p=0.006</math>) but not between groups vs control.</p> <p><i>Leisure time physical activity</i></p> <p>A trend toward increased physical activity in group diet + exercise; inactive individuals in group diet + exercise increased activity (<math>p&lt;0.01</math>) but active participants did not.</p> <p><i>Body weight:</i></p> <p>Significant body weight reduction in diet + exercise group (vs. control, <math>p=0.03</math>).</p>	<p>instruction; T10: prompt specific goal setting; T12: prompt self-monitoring of behaviour; T13: provide feedback on performance; T18: use follow-up prompts.</p>	
--	--	--	---	---	---	--	--	--

Teachable moments: Potential for behaviour change among people with Type 2 Diabetes and their relatives

			<p><b>Gender:</b> 7 women, 18 men</p> <p><b>Nicotine users:</b> 12</p> <p><b>Age:</b> M=41.4</p> <p><b>BMI:</b> M=26</p> <p><b>Body weight:</b> M=79.2</p> <p><b>Energy:</b> M=2 300 kcal</p> <p><b>Physical activity:</b> median: 90min/week</p> <p><b>Control group</b></p> <p>N=22</p> <p><b>Gender:</b> 9 women, 13 men</p> <p><b>Nicotine users:</b> 9</p> <p><b>Age:</b> M=42.1</p> <p><b>BMI:</b> M=26</p> <p><b>Body weight:</b> M=78.3</p>			<p>Significant decrease in waist circumference and sagittal diameter between diet + exercise and control group (<math>p &lt; 0.0001</math> and <math>p = 0.006</math>, respectively). No difference between intervention groups.</p> <p><i>Biochemical measures:</i></p> <p>Significant decrease in total cholesterol in the diet group, in comparison to diet+exercise and control groups (<math>p = 0.039</math> and <math>p = 0.024</math>).</p> <p><b>1-year follow-up</b></p> <p>Significant changes from baseline to</p>	
--	--	--	---	--	--	--	--

Teachable moments: Potential for behaviour change among people with Type 2 Diabetes and their relatives

			<p><b>Energy:</b> M=2 500 kcal</p> <p><b>Physical activity:</b> median: 215min/week</p>			<p>follow-up in most dietary adherence measures in the intervention groups. Most of these changes were significant compared to the control group.</p> <p>Body weight was reduced in diet + exercise group but waist circumference did not change.</p> <p>FG in diet and diet + exercise groups reduced within groups but no between group difference was observed.</p> <p>Fasting insulin did not change in any of the groups.</p> <p><b>2-year follow-up</b></p> <p>Sustained dietary change within diet</p>	
--	--	--	---	--	--	---	--

Teachable moments: Potential for behaviour change among people with Type 2 Diabetes and their relatives

						<p>and diet + exercise groups but with diminishing strength compared to year 1.</p> <p>No overall changes in physical activity in any of the groups.</p> <p>Significant increase in “inactive” participants in group diet + exercise.</p> <p>Decrease in body weight in group diet + exercise was sustained within the group.</p> <p>Fasting insulin reduction was also sustained within the group, and compared to the diet group.</p>		
--	--	--	--	--	--	---	--	--

Teachable moments: Potential for behaviour change among people with Type 2 Diabetes and their relatives

<p>Gorin, Wing, Fava, Jakicic, Jeffery, West, Brelje, DiLillo and the Look AHEAD research group (2008)</p>	<p>To examine whether a weight loss program delivered to one spouse has beneficial effects on the untreated spouse</p>	<p>USA</p>	<p><b>Target group:</b> partners or spouses of type 2 diabetes patients</p> <p><b>Recruitment:</b> Through type 2 diabetes patients</p> <p>N=357 spouses</p> <p>N=357 type 2 diabetes patients</p> <p><b>DEMOGRAPHICS FOR SPOUSES</b></p> <p><b>Intervention group:</b></p> <p><b>Age:</b> M=58.6</p> <p><b>Gender:</b> 54.8% female</p> <p><b>Ethnicity:</b> 89.4% Caucasian</p> <p><b>Education:</b> 66.7% attending college or more</p> <p><b>BMI:</b> M=31kg/m<sup>2</sup></p>	<p>RCT: 2 groups</p> <p>Duration: 12 months</p> <p><i>Intensive lifestyle intervention:</i> three group meetings and one individual session per month during the first 1-6 months, followed by 2 group meeting and one individual per month in months 7-12.</p> <p>Training in skills such as self-monitoring, problem solving, goal setting and relapse prevention.</p> <p>One session focus on controlling physical cues (e.g. storing food out of sight) and one on social cues (e.g. avoid temptation). Also taught ways to enhance social support for weight loss.</p>	<p><i>Demographics, weight and height, dietary intake</i> (130-item food frequency questionnaire), <i>physical activity</i> (The Paffenbarger Activity Questionnaire), <i>weight control practices</i> (only for spouses at 1 year), <i>household food inventory</i> (based on Block Food Frequency Questionnaire), <i>the food inventory</i> (for a subset of participants) <i>and exercise equipment</i> (The Exercise</p>	<p><i>Weight loss</i></p> <p>Spouses of intervention participants lost more weight than spouses of controls over the 1-year period(p&lt;0.001)</p> <p>The weight changes of participants and untreated spouses were correlated (p&lt;0.001)</p> <p><i>Dietary and physical activity</i></p> <p>Spouses of intervention patients had greater reductions in self-reported energy intake (p=0.007) and percent of energy from fat (p=0.012) but did not differ</p>	<p><b>Target behaviours:</b> diet and physical activity.</p> <p><b>BCTs:</b> T5: prompt barrier Identification; T10: prompt specific goal setting; T12: prompt self-monitoring of behaviour; T20: plan social support or social change; T23: relapse prevention.</p>	<p><b>Identified by the authors:</b> self-report measures, 70% of households consisted of two spouses (no children), it could be suggested that only more supportive spouses agreed to participate, well-educated sample</p>
--	--	------------	--	---	--	---	--	--

Teachable moments: Potential for behaviour change among people with Type 2 Diabetes and their relatives

			<p><b>Control group:</b></p> <p><b>Age:</b> M=59.8</p> <p><b>Gender:</b>59.2% female</p> <p><b>Ethnicity:</b>93.5% Caucasian</p> <p><b>Education:</b>69.9% attending college or more</p> <p><b>BMI:</b> M=30.1kg/m<sup>2</sup></p>	<p><i>Enhanced usual care program:</i> three information group meetings per year that provided information on diabetes, nutrition and physical activity. Strategies for enlisting social support were not discussed.</p>	<p>Environment Questionnaire).</p> <p>Measured before randomization and at 1 year</p>	<p>in changes in self-reported physical activity.</p> <p>Changes in energy intake and percent of energy from fat were correlated with weight loss in spouses (p&lt;0.001).</p> <p><i>Weight control practices</i></p> <p>Spouses of intervention participants were more likely to endorse strategies recommended for behavioural control.</p> <p><i>Changes in the shared home environment</i></p> <p>Total number of foods available did not differ between</p>		
--	--	--	--	--	---	--	--	--

Teachable moments: Potential for behaviour change among people with Type 2 Diabetes and their relatives

						<p>groups. The availability of high-fat foods decreased more in intervention group (<math>p=0.034</math>) and the availability of low-fat foods increased (<math>p=0.04</math>).</p> <p>The amount of exercise equipment did not change</p>		
<p>ProActive trial</p> <p>Kinmonth, Hardeman, Sutton and Ekelun (2008);</p> <p>Hardeman, Kinmonth, Michie, Sutton and the ProActive project team (2009) Williams et al. (2004) (study protocol)</p>	<p>To assess the effectiveness of a 1-year intervention to increase physical activity in first-degree relatives of type 2 diabetes patients.</p> <p>To assess whether different modes of delivery affect the acceptability of</p>	UK	<p><b>Target group:</b> offspring of people with type 2 diabetes</p> <p><b>Recruitment:</b> through patients with type 2 diabetes either from diabetes registers at general practice clinics of family history records at these clinics</p> <p>N=365</p>	<p>RCT: 3 groups</p> <p>Duration: 12 months</p> <p><i>Behaviour change programme either over the phone or in person:</i></p> <p>Delivered by a trained facilitator; focused on eight strategies: goal setting, action planning, self-monitoring, using rewards, goal-</p>	<p><i>Primary outcomes:</i> energy expenditure on daytime physical activity, measured at baseline and 1 year by monitoring heart rate for 3 days and an exercise test on a treadmill.</p>	<p>The intervention did not affect cardiorespiratory fitness or total physical activity.</p> <p>It did not affect any other measures, apart from self-reported health status on six of the eight SF-36 scales (wellbeing scale).</p> <p>Intention to be more physically</p>	<p><b>Target behaviour:</b> physical activity.</p> <p><b>BCTs:</b> T2: provide information on consequences; T4: prompt intention formation; T7: set graded tasks; T10: prompt specific goal setting; T11: prompt review of</p>	<p><b>Identified by the authors:</b> the complexity of the intervention may have confused rather than strengthened the message in the advice leaflet; homogeneous sample (sedentary, overweight,</p>

Teachable moments: Potential for behaviour change among people with Type 2 Diabetes and their relatives

	the intervention and its efficacy		<p><b>DEMOGRAPHICS</b></p> <p><b>Age:</b> M=40.6</p> <p><b>Gender:</b> 62% female</p> <p><b>Owned a car:</b> 98%</p> <p><b>Owned a home:</b> 89%</p> <p><b>Education:</b> M=18 years upon completion of full-time education</p> <p><b>Occupation:</b> 55% in managerial or professional jobs</p> <p><b>Living status:</b> 75% with their children</p> <p><b>Intention to increase physical activity:</b> 52% yes</p>	<p>review, building support from family and friends, prevention of relapses</p> <p>Telephone based programme included four 45-min calls and two 15-min calls during the 5-months intensive phase, followed by monthly postal contact.</p> <p>The home-based programme included four 1-hour home visits and two 15-min phone calls during the first 5 months, followed by monthly 30-min follow-up phone calls.</p> <p><i>Comparison group:</i> advice leaflet</p>	<p><i>Secondary outcomes:</i> self-reported physical activity, weight, body-fat %, blood pressure, glycosylated haemoglobin, fasting plasma glucose, lipids, insulin, wellbeing, anxiety, worry, intention to be more physically active, measured at baseline and at 1 year. Psychosocial variables were also measured at 6 months (well-being, anxiety, worry).</p>	<p>active was not stronger in the intervention group.</p> <p>Participants reported using behaviour change strategies at 6 months and 1 year.</p> <p>Both methods of delivery were acceptable.</p>	<p>behavioural goals; T12: prompt self-monitoring of behaviour; T15: teach to use prompts or cues; T18: use follow-up prompts; or social change T23: relapse prevention.</p>	<p>female, living with children).</p>
--	-----------------------------------	--	--	---	--	---	--	---------------------------------------

Teachable moments: Potential for behaviour change among people with Type 2 Diabetes and their relatives

<p>Pijl, Timmermans, Claasen, Janssens, Nijpels, Dekker, Marteau and Henneman (2009)</p>	<p>To assess the effectiveness of communication familial risk of diabetes on self-reported behavioural outcomes</p>	<p>The Netherlands</p>	<p><b>Target group:</b> one or more first-degree relatives with type 2 diabetes</p> <p><b>Recruitment:</b> from a diabetes screening program</p> <p><b>Intervention group:</b> N=54</p> <p><b>Control group:</b> N=53</p> <p><b>Ethnicity:</b> 100% Dutch Caucasian</p> <p><b>Age:</b> M=67.1</p> <p><b>Gender:</b> 43% men</p> <p><b>Education:</b> 5% higher vocational training or university</p> <p><b>BMI:</b> M=28.3</p> <p><b>Number of first-degree relatives with diabetes:</b></p>	<p>RCT</p> <p>Intervention duration: communicating risk once during a session with a researcher</p> <p><i>Intervention:</i> five-year diabetes risk was communicated using graphical bar chart; a family tree was constructed; familial risk as discussed; causes of diabetes were explained; information on prevention was provided.</p> <p><i>Control:</i> five-year risk was also communicated but based on general factors, rather than family history.</p>	<p>Assessed at baseline, 1-week and 3-month follow-up</p> <p><i>Behavioural intentions, self-reported behaviours, illness perceptions, perceived susceptibility to diabetes, worry about diabetes risk, psychological well-being.</i></p>	<p><i>Behavioural intentions:</i> No intervention effect</p> <p><i>Healthy diet:</i> Participants in the intervention group reported eating more healthily at 3-month follow-up (p=0.01)</p> <p><i>Physical activity</i> Marginal significance between groups (p=0.08).</p> <p><i>Illness perceptions:</i> Increase in perceiving heredity as a cause of type 2 diabetes in the intervention group (p&lt;0.01) at one week</p> <p>Increase in perceived consequences of diabetes in the</p>	<p><b>Target behaviours:</b> diet and physical activity.</p> <p><b>BCTs:</b> T1: provide information about behaviour-health link; T2: provide information on consequences.</p>	<p><b>Identified by the authors:</b> Measures of control were based on one-item measure; self-reported measures of behaviour; recruitment from a previous diabetes screening study.</p>
--	---	------------------------	--	---	---	---	--	---

Teachable moments: Potential for behaviour change among people with Type 2 Diabetes and their relatives

			median=1, range=1-7			control group and decreased in the intervention at one week (p=0.02)  Increase in perceived personal control in the intervention group at 3 months (p=0.03)  No difference in perceived susceptibility, worry or psychological well-being.		
Tokunaga-Nakawatase, Nishigaki, Taru, Miyawaki, Nishida, Kosaka, Sanada and Kazuma (2014)  Nishigaki et al. (2012) (study protocol)	To investigate the effects of print-delivered, computer-tailored lifestyle interventions using Lifestyle Intervention Support Software for Diabetes Prevention (LISS-DP) on favourable lifestyle change in	Japan	<b>Target group:</b> first-degree relatives of diabetic patients  <b>Recruitment:</b> at a medical check-up in a general hospital  <b>Intervention group:</b> N=70	RCT: 2 groups  Intervention duration: 6 months  <i>Lifestyle Intervention:</i> tailored, concrete lifestyle recommendations that followed the process: 1) lifestyle and background data collection by self-	<i>Primary outcomes:</i> changes in total energy intake, fat-energy ration, physical activity: The Modified Ministry of Health and Welfare Food Questionnaire (M-MHW-FQ)	<i>Total energy intake:</i> Change from baseline to 6 months was significantly greater in the LI group compared to the control group (p=0.009).  No significant changes between groups at 3 and 12	<b>Target behaviours:</b> diet and physical activity <b>BCTs:</b> T1: provide information about behaviour-health link; T2: provide information on consequences;	<b>Identified by the authors:</b> potential sampling bias due to low acceptance rates, one center (hospital in Tokyo), homogeneous sample (hospital employees);

Teachable moments: Potential for behaviour change among people with Type 2 Diabetes and their relatives

	relatives of type 2 diabetes patients		<p><b>DEMOGRAPHICS</b></p> <p><b>Sex:</b> 67.1% male</p> <p><b>Age:</b> M=44.9</p> <p><b>Weight:</b> M=62.2kg</p> <p><b>BMI:</b> 22.5kg/m<sup>2</sup></p> <p><b>Family history of diabetes:</b> 50 father, 17 mother, 9 sibling</p> <p><b>Living with:</b> 48 spouse, 45 offspring, 9 father, 19 mother</p> <p><b>Occupational status:</b> 60 full-time, 8 part-time, 2 housekeeping</p> <p><b>Education:</b> 1 less than high school, 18 high school, 12 technical school, 37 university/college, 2 graduate school</p>	<p>administered questionnaire 2) generation of tailored recommendations 3) output of tailored recommendations 4) delivery of the recommendations via email.</p> <p>Provision of a pamphlet about general diabetes prevention information, related to diet and physical activity.</p> <p><i>Control group:</i> Conventional routine care and a pamphlet about general diabetes prevention information, related to diet and physical activity.</p>	<p>and the International Physical Activity Questionnaire (IPAQ)</p> <p>Measured four times: at one week, three months, six months and one year after recruitment.</p> <p><i>Secondary outcomes:</i> biomedical characteristics (age, BMI, waist circumference, HbA1c, fasting blood glucose, triglyceride, low-density and high-density lipoprotein cholesterol) at baseline and at 12 months.</p>	<p>months.</p> <p>Intervention effectiveness only during the intervention –no sustained behaviour.</p> <p><i>Fat-energy ratio</i></p> <p>No difference between groups</p> <p><i>Physical activity</i></p> <p>No difference between groups</p> <p><i>Biomedical data</i></p> <p>No difference between groups</p>	T8: provide instruction.	self-report measures
--	---------------------------------------	--	--	--	--	---	--------------------------	----------------------

Teachable moments: Potential for behaviour change among people with Type 2 Diabetes and their relatives

			<p><b>Control group:</b> N=71</p> <p><b>DEMOGRAPHICS</b></p> <p><b>Sex:</b> 63.4% male</p> <p><b>Age:</b> M=45.6</p> <p><b>Weight:</b> M=63.1kg</p> <p><b>BMI:</b> 22.9kg/m<sup>2</sup></p> <p><b>Family history of diabetes:</b> 49 father, 27 mother, 2 sibling</p> <p><b>Living with:</b> 41 spouse, 33 offspring, 13 father, 28 mother</p> <p><b>Occupational status:</b> 62 full-time, 8 part-time, 1 housekeeping</p> <p><b>Education:</b> 2 less than high school, 10 high school, 17 technical school, 38</p>				
--	--	--	---	--	--	--	--

Teachable moments: Potential for behaviour change among people with Type 2 Diabetes and their relatives

			university/college, 4 graduate school					
DiAlert Heideman et al. (2011, 2012, 2015)	To assess the efficacy of DiAlert in terms of body weight and weight loss in order to prevent type 2 diabetes in Dutch overweight people with family history of type 2 diabetes	The Netherlands	<p><b>Target group:</b> at least one first-degree relative with type 2 diabetes</p> <p><b>Recruitment:</b> 1)through GPs who identified people with family history with diabetes and people with fasting glucose between 6 and 6.9 mmol/L 2)posters in pharmacies and adverts in newspapers 3)women with gestational diabetes who received</p>	<p>RCT</p> <p>Intervention duration: 30 weeks</p> <p>Two groups</p> <p><i>Intervention:</i> DiAlert is based on HAPA. Two interactive group sessions of 150 min delivered over 2 consecutive weeks by two experiences dietitians and two MSc students, who were trained by the team. Session 1 focused on discussion around risk factors for type 2 diabetes, health benefits of lifestyle changes, self-monitoring and</p>	<p>Measures collected at baseline, 3 months and 9 months</p> <p>Primary outcome: body weight</p> <p><i>Anthropometric data:</i> body weight, height, waist circumference, blood pressure</p> <p><i>Laboratory data:</i></p> <p>Blood samples</p> <p><i>Questionnaire:</i></p> <p>Socio-demographics, body weight perception and</p>	<p><i>Anthropometric changes</i></p> <p>No significant difference between groups on weight changes.</p> <p>Significantly more participants in the intervention group lost at least 5% of their initial body weight after 9 months (p=0.03).</p> <p>Significant decrease in waist circumference at 3 months in both groups, but it was sustained at 9 months only in the intervention group (p=0.01)</p>	<p><b>Target behaviours:</b> diet, physical activity, smoking, alcohol consumption.</p> <p><b>BCTs:</b> T1: provide information about behaviour-health link; T2: provide information on consequences; T4: prompt intention; T5: prompt barrier identification; T10: prompt specific goal setting; T12: prompt self-monitoring of behaviour;</p>	<p><b>Identified by the authors:</b> underpowered, heterogeneous sample of offspring and siblings, anthropometric measurements were not blinded to treatment allocation (potential experimenters' bias), self-report measures of behaviour, fidelity was not measured objectively</p>

Teachable moments: Potential for behaviour change among people with Type 2 Diabetes and their relatives

			<p>treatment at one hospital</p> <p>N=96, Control N=51, Intervention = 45</p> <p><b>DEMOGRAPHICS</b></p> <p><b>Age:</b> M=55</p> <p><b>Gender:</b> 67.7% women</p> <p><b>Ethnicity:</b> 80% Dutch, 4.2% Surinamese, 2.1% Antilles, , 4.2% Netherlands East Indies</p> <p><b>Married/with partner:</b> 69.6%</p> <p><b>Education:</b> 49.5% low, 18.9% middle,31.6% high</p> <p><b>Family history of type 2 diabetes:</b> 89.6% parental, the remaining – siblings</p>	<p>physical activity diaries. Session 2 focused on nutrition and exercise balance, benefits and barriers of lifestyle change, setting personal action plans.</p> <p>Newsletters with information about health behaviour change following HAPA and tips for healthy eating and physical activity were sent after 1, 4, 19 and 28 weeks after the sessions.</p> <p><i>Control group:</i></p> <p>A brochure of the Dutch Diabetes Foundation about type 2 diabetes and heredity and general risk factors.</p>	<p>importance, weight loss history, diet (modified version of the food frequency questionnaire), physical activity (IPAQ short form), smoking status, alcohol intake, family history of type diabetes, perceived health status, psychological distress (The Kessler-10), risk perception (IPQ-R), self-efficacy for healthy eating and exercise (10 items, 4-point likert scale), outcome expectancies (8 questions, 5-point Likert scale),</p>	<p>Improvement in systolic blood pressure in both groups at 3 months, but sustained at 9 months only in the intervention group (p=0.06).</p> <p><i>Metabolic outcomes:</i></p> <p>No interaction effects between time and group.</p> <p><i>Perceptions and behaviour change:</i></p> <p>No changes in intentions to change behaviour. The intervention did not affect self-efficacy and outcome expectancies.</p> <p>No changes in diet, physical activity, smoking, alcohol</p>	<p>T17: prompt practice; T23: relapse prevention.</p>	
--	--	--	---	--	---	--	---	--

Teachable moments: Potential for behaviour change among people with Type 2 Diabetes and their relatives

			<b>BMI:M=30.5</b>		intention and action planning to change behaviour (5-point Likert scale).	intake in either group.		
--	--	--	-------------------	--	---	-------------------------	--	--