Does intention to change physical activity and diet moderate effects of a theory-based behavioural intervention on BMI?

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Motivation to change behaviour may be a necessary precondition for effective lifestyle counseling.

Including both motivational and volitional components in an intervention may result in more behaviour change (French, Stevenson, Michie, 2012).
No additional effect of a behaviour change intervention over and above intensive T2D treatment
ADDICTION-Plus intervention

• Delivery: Trained lifestyle facilitators
• Dose: 1-hour introductory meeting, six 30-minute meetings and 4 brief phone calls
• Intervention design based on psychological theory and evidence

• Facilitators taught patients a range of BCTs to achieve behaviour change and maintenance over time
  • BCTs mapped onto the TPB, Operant Theory, Carver and Scheier’s Control Theory and Relapse Prevention Theory
  1. Goal setting
  2. Action planning
  3. Use of prompts and reminders
  4. Motivating oneself to sustain changes
  5. Social support
  6. Self-monitoring
  7. Goal review
  8. Preparing for setbacks

AIM

• Are baseline intentions to increase physical activity (PA) and to decrease dietary fat differentially associated with reductions in BMI in intervention and control arms of the ADDITION Plus trial?
METHODS 1/2

• Participants: Men and women (N = 478) (40-69 years) with recently clinically diagnosed or screen-detected type 2 diabetes mellitus (T2DM)
  – Control: Intensive T2DM treatment
  – Intervention: Intensive T2DM treatment plus a facilitator-led theory-based, individual-level behaviour change intervention

• Measures:
  – Intention to increase PA and decrease dietary fat (baseline)
  – Adiposity (at baseline and at 1 year)
    • Height & weight measured by research staff
      → Body Mass Index

METHODS 2/2

• **Items measuring intentions:**
  - I intend to...
    • be more physically active in the next 12 months
    • eat a lower fat diet in the next 12 months
  - It is likely that I will...
    • be more physically active in the next 12 months
    • eat a lower fat diet in the next 12 months

• **Response options:** summed scores re-categorised into:
  - Strongly disagree
  - Disagree
  - Neither agree nor disagree
  - Agree
  - Strongly agree
  - “Low intention”
  - “High intention”
RESULTS 1/2

Body Mass Index (1 year follow-up)

<table>
<thead>
<tr>
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<th>Main effects</th>
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<tr>
<td>Intention</td>
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<tr>
<td>Trial arm</td>
<td>-.013</td>
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<tr>
<td>Baseline BMI</td>
<td>-.179***</td>
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<td>Gender</td>
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<td>SES</td>
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<td>Interaction intention x arm</td>
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Controlling for gender, socioeconomic status, baseline BMI. Interaction term p=.003
DISCUSSION

• Having strong intentions for changing both PA and diet is related to an additional ~1 kg/m$^2$ decrease in BMI in the ADDITION Plus intervention arm
  – But not among controls

• Interaction result robust
  – Adding baseline BMI, sex, and SES, did not change the statistical significance of the interaction term

• Practical implications:
  – Screen for motivation at the start of counseling
  – Include motivational components in populations with weak intentions
LIMITATIONS

• Combining the sum score of the PA and diet intentions measures is not based on validated procedures

• BMI as the outcome and not the behaviours
  – These analyses will be conducted shortly
  – However, changes in BMI reflect changes in PA and diet, and is an "objective" indicator for those changes in this population
Thank you for your attention!

• Funding acknowledgements:
  – The *ADDITION-Plus* trial was supported the Wellcome Trust, the Medical Research Council, Diabetes UK and National Health Service R&D support funding
  – Dr Nelli Hankonen was supported by the Kone Foundation and the Academy of Finland
SPARE SLIDES
## Descriptives

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<td>40</td>
<td>29</td>
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<td>66</td>
<td>63</td>
<td>129</td>
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<td>Intend to change both</td>
<td>129</td>
<td>136</td>
<td>236</td>
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<tr>
<td>TOTAL</td>
<td>235</td>
<td>228</td>
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Which Behavior Change Techniques are Associated with Changes in Physical Activity, Diet and Body Mass Index in People with Recently Diagnosed Diabetes?

Nelli Hankonen, Ph.D. • Stephen Sutton, Ph.D. • A. Toby Prevost, Ph.D. • Rebecca K. Simmons, Ph.D. • Simon J. Griffin, D.M. • Ann Louise Kinmonth, M.D. • Wendy Hardeman, Ph.D

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Abstract

Background Meta-analyses have identified promising behavior change techniques (BCTs) in changing obesity-related behaviors from intervention descriptions. However, it is unclear whether these BCTs are used by intervention participants and are related to outcomes.

Purpose The purpose of this study is to investigate BCT use by participants of an intervention targeting physical activity and diet and whether BCT use was related to behavior change.

Results Thirty-six percent of the participants reported using all 16 intervention BCTs. Use of a higher number of BCTs and specific BCTs (e.g., goal setting) were associated with a reduction in body mass index (BMI).

Conclusions BCT use was associated with weight loss. Future research should identify strategies to promote BCT use in daily life. (Trial Registration: ISRCTN99175498.)

Keywords Behavior change techniques • Diet • Physical activity • Weight loss
Many of the effective techniques of the Addition Plus trial require effort and thus may better suit motivated individuals?

Fig. 2 Mean changes in self-reported fat intake (% of calorie intake) over 1 year among users (Y=Yes) and nonusers (N=No) of goal setting, goal review, and preparing for/dealing with setbacks (all baseline-adjusted differences significant p<.05)

Hankonen, Sutton, et al., 2015, ABM
Intentions in intervention arm

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<td>176</td>
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a. groupaplus = 2
RESULTS in a nutshell

INTENTION to change either PA & DIET or neither

INTENTION to change both PA & DIET

INTENTION to change either PA & DIET or neither

INTENTION to change both PA & DIET
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a. Dependent Variable: bmi_ch1