Factors associated with successful weight loss in the NPRI BeWEL randomised controlled trial of adults at risk of colorectal cancer

OR:

Why are some people more successful at losing weight than others?

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The BeWEL study

- Two-arm multi-centre RCT (2010-13) to assess the impact of a lifestyle intervention offered to healthy overweight individuals who had had colorectal adenomas (benign) removed following colorectal cancer screening

- **n=329 patients** randomised (163 intervention, 166 control) post-treatment to:
  - 12 month BeWEL intervention
  - Or usual care

- Four NHS sites: Greater Glasgow & Clyde, Tayside, Ayrshire & Arran, Forth Valley

Motivational interviewing

Self-monitoring and feedback

3 monthly home visits by lifestyle counsellor
Monthly telephone contacts for next 9 months

Goal setting / implementation intentions

Educational tools / loan items

Diet and PA

Social support

Primary outcome: weight change at 12 months

Mean weight loss at 12 months:
3.5kg intervention group v. 0.78kg control*  
Intervention group continued weight loss throughout with max weight loss at 12 months  
*p<0.0001
‘Super-achievers’ sub-group analysis

Aim:
• To explore factors explaining successful weight loss within the intervention group by comparing 2 sub-groups

<table>
<thead>
<tr>
<th>‘SUPER-ACHIEVERS’ (SAs)</th>
<th>≥7% weight loss</th>
<th>33</th>
<th>-10.2 ± 4.3*</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘MODERATE TO LOW ACHIEVERS’ (MLAs)</td>
<td>&lt;7% weight loss or weight gain</td>
<td>115</td>
<td>-1.6 ± 3.0*</td>
</tr>
</tbody>
</table>

Super-achievers: mean weight loss of 11.5% body weight
Moderate achievers mean weight loss of 4.2%
Low achievers mean weight gain of 0.8%

*Group difference p<0.01
Were super-achievers different at baseline?
## Personal characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Super-achievers</th>
<th>Moderate / low achievers</th>
<th>Significant difference?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>66.7%</td>
<td>76.5%</td>
<td>×</td>
</tr>
<tr>
<td>Age (years)</td>
<td>65.2 ± 6.7</td>
<td>63.0 ± 6.8</td>
<td>×</td>
</tr>
<tr>
<td>Deprivation (% in most deprived 5 SIMD deciles)</td>
<td>36.4%</td>
<td>42.6%</td>
<td>×</td>
</tr>
<tr>
<td>Retired</td>
<td>60.6%</td>
<td>58.3%</td>
<td>×</td>
</tr>
<tr>
<td>Married / cohabiting</td>
<td>87.9%</td>
<td>78.3%</td>
<td>×</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>31.1 ± 3.4</td>
<td>31.1 ± 4.9</td>
<td>×</td>
</tr>
<tr>
<td>Previously attempted weight loss</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Previously successful</td>
<td>87.5%</td>
<td>84.6%</td>
<td>×</td>
</tr>
</tbody>
</table>
Perceptions of health & beliefs

• Several differences in baseline health perceptions, see above
• No differences at baseline in self-efficacy, beliefs about lifestyle risk, and perceptions of own lifestyle, BUT: super-achievers were more likely than other two groups to perceive themselves to be overweight

![Bar chart showing comparisons between moderate or low achievers and super-achievers on various health perceptions.](chart.png)

- Health poor/fair: p=0.02
- Health limits moderate activities: p=0.049
- Accomplishes less due to physical health: p=0.04
- Worked/did activities less carefully due to emotional health: p<0.01
Which behaviours did they report greater changes in?
Physical activity changes

• Step count also increased significantly more in the SAs:
  • SA  +1820 (± 3671) vs. MLA -340 (± 2607) (p<0.01)

Dietary intake, sugary drinks, alcohol

• Change in fruit and veg – only significant factor
  • 76% SAs ↑ portions per day (p<0.01)
  • 45% MLAs
Were there differences in intervention implementation?
• Analysis showed no differences according to achievement status between the four sites.

• Although no formal fidelity assessment was conducted, we can be fairly confident that the different levels of success were not explained by differences between counsellors in their approach.
What did the qualitative analysis tell us?
Themes explaining greater success in SAs

• **Less affected by ill-health**
  • Although the pattern wasn’t consistent, low-achievers tended to speak more about being deterred by poor physical health and mental health, especially in terms of limiting their PA ability

• **Lifestyle changes were more extensive and incorporated quickly into daily routine**
  • MLAs in contrast described their changes as less definite and more ad hoc: ‘being more aware’, ‘trying to’, ‘little tweaks’

• **Drew on previous and early success**
  • Prior to BeWEL
  • Early weight loss in BeWEL

“I couldn’t believe how it was coming off, just going [out] for they walks” (SA, 65y).

“I was really being very strong willed at that point in time. I’d mastered the smoking ... I thought if I can do the smoking, I can definitely get rid of the weight”.
Themes explaining greater success in SAs

- **Motivation and commitment**
  - ‘Determination’ and ‘discipline’

- **Flexibility and realistic approach**
  - Permitting occasional lapses and treats
  - Not wasting time on unrealistic changes

- **Approach to coping with set-backs**
  - SAs were spurred on rather than defeated by set-backs or plateaus

- **Prompts, aids and information**
  - Helped motivate and sustain change in some SAs

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“Brown rice, I’d rather jump out the window than eat brown rice!” (SA, 70y)

“Once I make up my mind to do something, I usually do it”. (SA, 70y)

“If I let [the counsellor] and the nurse down, I was letting myself down as well and I didn’t want to do that either’ (SA, 62y)

‘...a wee bit disappointed with my exercise levels ... and I was disappointed myself ... so I made sure it didn’t happen again”.
Themes with no clear relationship with success

- Family and social support
- Relationship with lifestyle counsellor
- Access to healthy food and opportunities for activity

“in the end it’s up to you, they can encourage you and everything else but they can’t make you do anything” (SA, 70y).
What could we conclude about factors associated with ‘super achievement’?

No particular patterns in:

- Socio-demographic profile
- Intervention implementation
- The particular trigger for participation
- Beliefs and knowledge regarding risk and prevention
- Family/partner support
- Relationship with counsellor
- Access and resources
Super-achievement associated with:

Quantitative analysis:
- Being less limited at baseline by health issues
- Perceiving themselves to be overweight
- Extensive change to diet and PA

Qualitative analysis:
- Making changes routine
- Determination and consistency
- Being able to draw on previous and early success
- Devising strategies to cope with setbacks and temptation
- Sense of responsibility to self
- Receptivity & flexibility to new info and advice
Conclusions

• Interventions are not one-way channels

• When we talk about an intervention working, what we really mean is that people chose to engage with it and to change

• Even with a well-designed, theoretically sound, well delivered intervention, success will depend on people choosing to engage and change

• Understanding why some people do these more readily than others give us insights into the types of people more likely to change (and less likely, too) and into the conditions in which success is most likely to occur
Conclusions

• People have different needs at different moments in time and from each other

• Support for lifestyle change should be offered not as a one-off but at multiple points in time, so that people can engage when motivation and circumstances coincide

• Interventions should adapt flexibly while providing core elements:
  • Foster determination to succeed
  • Provide early experience of success and draw on previous success
  • Help people incorporate changes into daily routines
  • Encouraging a flexible (and realistic) approach, including response to set-backs
  • Understanding when and what prompts and information might be motivating
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