Promoting cancer prevention through a habit-based intervention: Effects on self-regulatory skills, automaticity and weight loss

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Abstract number: AOS6-4
Track 1 - Stemming the tide: innovations in prevention and screening
Abstract presented before: N
Disclosure of interest: None
Research has identified numerous factors that increase an individual's risk for developing cancer. Not all factors have the same impact on cancer risk. The factors with the biggest impact are tobacco use, obesity and overweight, infection with one of several pathogens, lack of physical activity, and poor dietary habits. Adopting healthy approaches to living (see Figure 5) could eliminate or reduce many of these risks and therefore have a tremendous influence on our nation's burden of cancer. Data from (16); figure adapted from (5).
Habit-based intervention

- Habits are (relatively) automatically triggered actions
  - Formed through repetition in a consistent context
    - \( \uparrow \) automaticity
  - Can be used to help individuals ‘learn’ healthy lifestyle behaviours
- Require less engagement or motivation
- Less time-consuming to explain
- Promotes long-term maintenance
10 TOP TIPS INTERVENTION

- A leaflet that describes a set of simple energy balance behaviours that can be turned into habits (daily deficit of 800–900kcal)
- Increases automaticity of target behaviours
  - Explains concept of habits
  - Consistently repeat behaviour in the same daily context
- Enhances self-regulatory skills
  - Encourages planning and revision of plans
- Promotes self-monitoring
  - Achievement of the tips
  - Weight

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**ten top tips tick sheet: Keeping track of your progress**

Fill in this tick sheet every day to record whether or not you managed each tip. Keeping a record has been shown to increase people's success in developing healthy habits. Keeping track of your weight is also very useful. Daily weighing has been shown to increase successful weight control. In the notes column you can write details of how you are achieving the tips, and anything that particularly helps you use them. This information will help you plan for the next week.

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<td>4. Pack a healthy snack</td>
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<td>5. Learn the labels</td>
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<td>6. Caution with your portions</td>
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Design

A two-arm, individually-randomised, controlled trial in obese adults in primary care, comparing weight loss in patients receiving a simple weight control intervention based on habit formation theory (10TT) vs. ‘usual care’

Primary Outcome

Change in body weight over 3 months

Secondary Outcomes

- Change in self-regulatory skills (31-item Self-Regulation Questionnaire- SRQ, adapted for eating and weight)
- Change in automaticity (16 items based on the automaticity question from the Self-Report Habit Index)
Randomised (n=537) to control (n = 270) then intervention (n = 267).

3 months follow-up (n=199) and 3 months follow-up (n=190) with attrition of 77 (n=71) of which 30 withdrew, 5 unable to contact, 4 nurse error, 2 personal reasons, 1 illness, 25 no reason given, 12 early/late appointment.

Participant flow chart:

Number of letters sent (n=3092, from 14 practices)

- Didn’t respond (n=1826)
  - Number of letters returned (n=1266)
    - Declined participation (n=581)
      - Number agreed to participate (n=685)
        - Number assessed (n=568)
          - Randomised (n=537)

Attrition (n=77)
- Withdrawn: 30
- Unable to contact: 5
- Nurse error: 3
- Did not attend appointment: 1
- Personal reasons: 1
- Illness: 1
- No reason given: 25
- Early/late appointment: 12

64% Female
95% White
Median age = 59
Mean BMI = 35
Results: Weight Loss

- 10TT reduced weight significantly more than usual care at 3 months by an adjusted average of 0.87kg (p=0.004)
- 16% achieved clinically significant weight loss (≥5%)
Patients with lower self-regulatory skills and automaticity at baseline showed greater changes.
Results: Mediation

Sobel test: Self-regulation: $z=2.42$, $p=.01$; Automaticity: $z=2.39$, $p=.01$
Conclusions

• A brief, habit-based intervention can promote weight loss in obese primary care patients

• The intervention supports patients to develop habits and improve their self-regulatory skills, and these changes appear to be key mechanisms behind the observed weight loss
  – Potentially important targets to consider when developing interventions to change behaviour for cancer prevention

Limitations

– Not powered to explore changes in self-regulation & automaticity
– Self-report measures
– Only over the short-term
Acknowledgements

Nathalie Kliemann

Professor Jane Wardle (1950-2015)

• The National Prevention Research Initiative (NPRI) Funding Partners
• Participating practices and their nurses, GPs, practice managers, health professionals and patients