Targeting specific food choices in weight loss interventions: food-level analysis

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Rationale

- Overreliance on examining nutrients, ingredients and single foods in dealing with diets for weight loss may be misleading.
- Weight control = a total diet effect

Hypothesis

- A dietary pattern approach to analysis, applied to a clinical intervention data may reveal information that cannot be obtained by examination of nutrients alone.
  - **Reveal patterns of eating behaviour informative for the clinical setting**

Aim

- To develop food categories for conducting dietary pattern research in a clinical context
- To evaluate food choice patterns in the context of a clinical weight loss trial

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ORIGINAL ARTICLE

Baseline dietary patterns are a significant consideration in correcting dietary exposure for weight loss

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BACKGROUND/OBJECTIVES: Dietary pattern studies are traditionally the domain of epidemiological research. From a clinical perspective, there is a need to explore the effects of changing food and dietary patterns of individuals. The aim was to identify patterns of food choice in the context of a clinical weight loss trial. Cluster analysis based on reported serves of food groups revealed dietary patterns informative for the clinical setting.
SUBJECTS/METHODS: Cluster analysis was conducted using diet history data from two clinical trials at baseline, and outcomes at 3 months were reviewed based on these clusters ($n = 231$). The cluster solution was analysed using defined food groups in serves and with respect to clinical parameters and requirements for selected nutrients.
RESULTS: Two distinct dietary patterns were identified from the reported baseline dietary intakes. Subjects in Cluster 1 reported food patterns characterised by higher intakes of low-fat dairy and unsaturated oils and margarine and were generally more closely aligned to food choices encouraged in national dietary guidelines. Subjects in Cluster 2 reported a dietary pattern characterised by non-core foods and drinks, higher- and medium-fat dairy foods, fatty meats and alcohol. At 3 months, Cluster 2 subjects reported greater reductions in energy intake (-5317 kJ; $P<0.001$) and greater weight loss (-5.6 kg; $P<0.05$) compared with Cluster 1.
CONCLUSIONS: Overweight subjects with reported dietary patterns similar to dietary guidelines at baseline may have more difficulty in reducing energy intake than those with poor dietary patterns. Correcting exposure to non-core foods and drinks was key to successful weight loss.

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SMART & HEAL

Is a higher omega 3 intake advantageous for weight loss? [SMART study]

- CI Tapsell LC, Batterham MJ, Charlton KE
- Funding source: NHMRC project ##514631.
- ACTR 12608000425392

Importance of high vegetable consumption in controlling weight [HEAL study].

- CI Tapsell LC, Batterham MJ, Price W, Gidley M, Johnson S, Williams D.
- Funding source: Horticulture Australia Ltd using the vegetable levy and matched with funding from the Australian government Project #VG0907.
- ACTR 12610000784011

Method

- Developing a defensible system of food categories was central to the research framework.
- Seventeen food categories to define the dietary patterns.

1. Wholegrain foods (30g)
2. Non-wholegrain cereals (30g)
3. Fruit (150g)
4. Free vegetables (75g)
5. Starchy vegetables (75g)
6. Legumes (75g)
7. Low fat dairy foods:<3.5% fat (150ml)
8. Medium fat dairy foods:3.5-10% fat (150ml)
9. High fat dairy foods: >10% fat (30g)
10. Lean Meat and poultry (30g)
11. Fatty meat (30g)
12. Fish and seafood (30g)
13. Eggs (1 egg)
14. Nuts (and seeds) (30g)
15. Unsaturated oils and margarine (5g)
16. Alcoholic beverages (400kJ)
17.Non-Core foods and drinks (600kJ)

Method

- Cluster analysis
  - Answers the question:

    Which people cluster together with regard to dietary intake patterns within the defined population?

    What typifies their diet?
- Cluster analysis at baseline, and the association with weight-loss after 3-months.

Results

- Cluster 1 subjects closer to Dietary Guidelines (food choices).
- Cluster 2 subjects higher consumption of non-core foods and drinks (>6 serves), more higher and medium fat dairy foods, more fatty meat and alcohol.
- By 3 months Cluster 2 reduced
  - **lean and fatty meats by over 2 serves, and**
  - **all non-core foods and drinks by over 5.5 serves.**

	Cluster 1	Cluster 2	P value
Weight loss	-4.4kg	-5.6kg	<0.05
Energy reduction	-2500kJ	-5317kJ	<0.001

Across the sample

- Overall, there was a significant reduction in mean energy intake yet no difference in food weight

	Baseline	3-months	P value
Energy	9449±2998kJ	6348±1400kJ	<0.001
Food weight*	1581±455g	1594±429g	0.069

- Non-core foods and drinks (NCFD) were exchanged for vegetables (by weight) in this sample.

* Not including liquids

Summary

- Baseline dietary patterns not often the focus in interventions
- Cluster analysis defined groups within the intervention population with similar dietary patterns
- The defined food categories related well to the clinical and anthropometric measurements.
- Useful to review this over a longer timeframe
- Additional analysis shows flattening of the rate of weight loss over 12 months
- Non-core foods and drinks increasing again…

References

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- Tapsell LC, Batterham MJ, Thorne RL, O'Shea, J.E., Grafenauer, S.J., Probst, Y.C., (2014) *"Weight loss effects from vegetable intake: a 12-month randomised controlled trial".* European Journal of Clinical Nutrition, advance online publication 26 March 2014. http://www.nature.com/doifinder/10.1038/ejcn.2014.39 (HEAL)
- Grafenauer, SJ, Tapsell, LC, Beck, EJ and Batterham MJ. *"Baseline dietary patterns are a significant consideration in correcting dietary exposure for weight loss"*. European Journal of Clinical Nutrition, 67, 330–336; doi:10.1038/ejcn.2013.26