

Does tailoring make a difference?

A review of the long-term effectiveness of tailored nutrition education for adults, including priority population groups

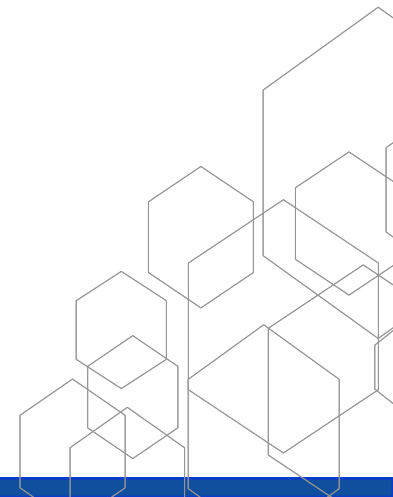
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Tailored nutrition education

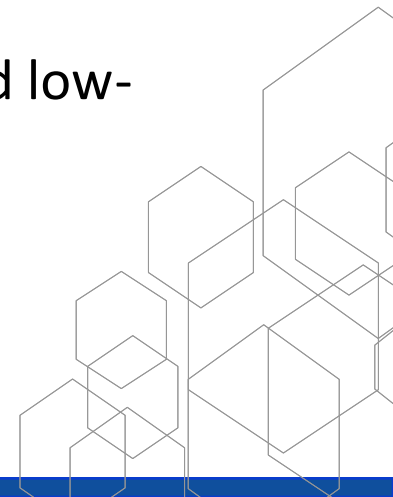
- *Combination of information or change strategies*
- *Intended to reach one specific person*
- *Based on characteristics unique to that person*
- *Related to outcome of interest*
- *Derived from individual assessment*





Effectiveness of tailored nutrition education

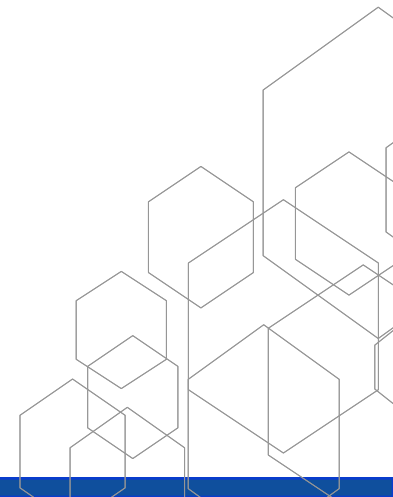
- Adamson and Mathers (2004)
 - Tailoring a key component of effective dietary interventions
- Kroeze and colleagues (2006)
 - RCT's computer tailored interventions 1965-2004
 - Six trials long-term effects (\geq six months)
 - Tailored nutrition education more effective than generic nutrition education for fruit & vege intake (n=2) and weight loss (n=1)
 - Did not explore effectiveness for priority ethnic and low-income groups





Aim

- Update and evaluate the long-term effectiveness of tailored nutrition education for adults
 - Compare with generic nutrition education and no nutrition education (control)
 - For priority ethnic and low-income groups





Methods

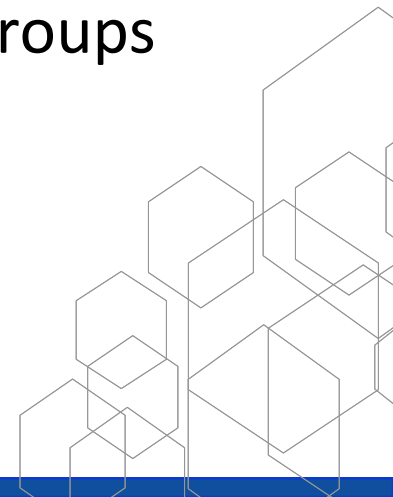
- RCT or quasi RCT published 1990 – 2007
- Outcomes:
 - Nutrition related behaviours (e.g. fruit intake)
 - Anthropometric outcomes (e.g. BMI)
- Participants:
 - ≥ 18 years, any health status
- Priority ethnic groups:
 - $\geq 50\%$ priority ethnicity or priority ethnicity compared with other ethnic group
- Low-income groups:
 - $\geq 50\%$ low-income or low-income compared with higher income group





Methods

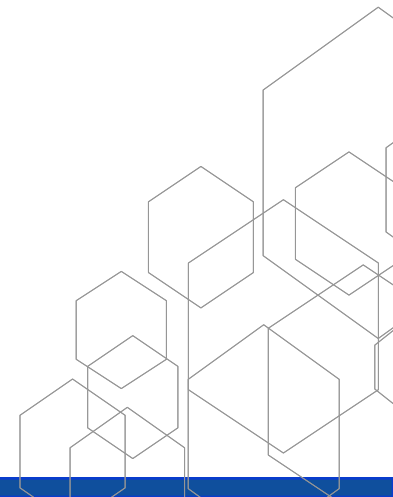
- **Interventions:**
 - Tailored nutrition education delivered by non face-to-face methods
- **Meta-analyses** (statistical combining of results)
 - Comparison groups and outcomes similarly alike
- **Narrative review**
 - Studies of priority ethnic and low-income groups





Results - studies

- 25 trials met inclusion criteria
- 16 trials included
 - 15 trials meta-analyses (20,809 participants)
 - 5 trials narrative review
 - 4 priority ethnic groups (5,981 participants)
 - 1 low-income group (2,042 participants)
- 9 studies were excluded
- Two outcomes assessed by meta-analyses
 - Fruit and vegetable intake (servings/day)
 - % energy from total fat





Results – studies & participants

- Most trials (12/15) completed in the US
- Median sample size = 674 (range; 105 to 5,042)
- Most (11/16) compared generic with no nutrition education
- Age range 18 to 65 years
- Predominantly female (6/16)
- Priority ethnic predominantly African-American

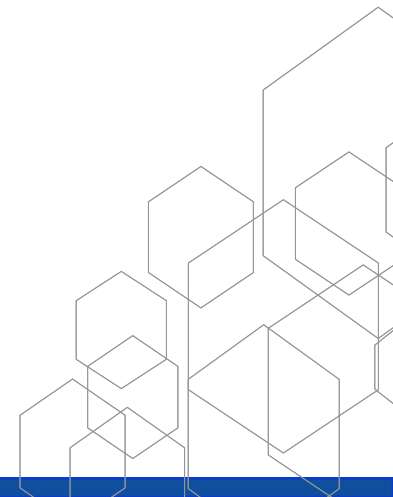




Results – interventions and outcomes

- Most tailored by current diet/food purchases and behaviour change theory (e.g. TTM)
- Common delivery methods:
 - Newsletters
 - Pamphlets
 - Magazines
 - Workbooks

All studies of priority ethnic and low-income groups
- Frequency of feedback:
 - one to 36 occasions
- 10/15 trials were of ‘moderate’ quality

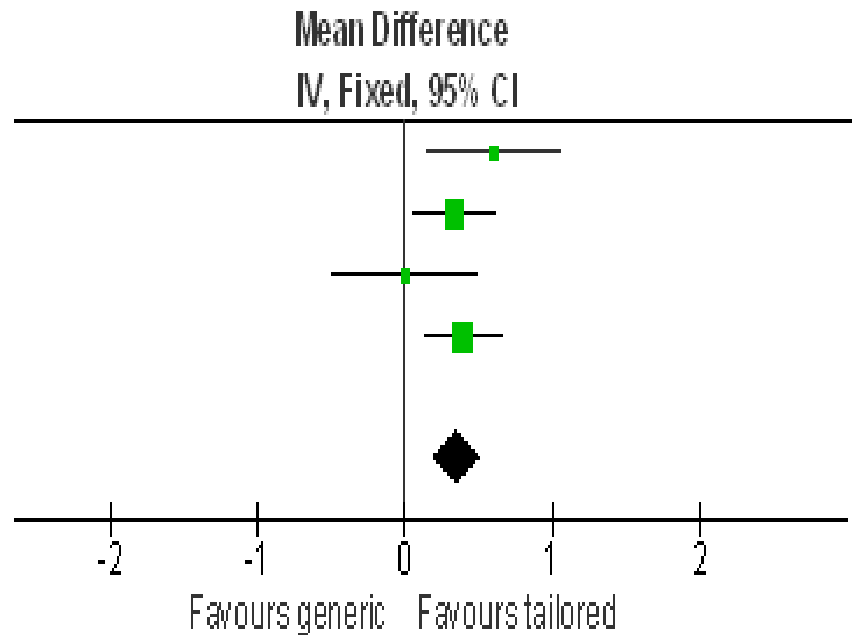


Results – fruit & veges; tailored vs. generic



Servings of fruits and vegetables per day

Tailored vs. generic nutrition education

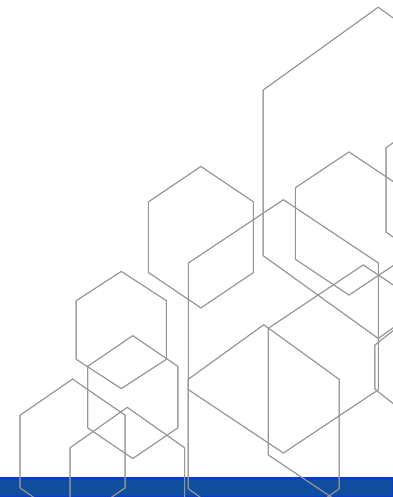


- 4 studies (4,638 participants)

- Weighted mean difference (95% CI) = **0.35 (0.19, 0.52)**

- $P < 0.0001$

- ($I^2 = 7\%$; $p = 0.36$)

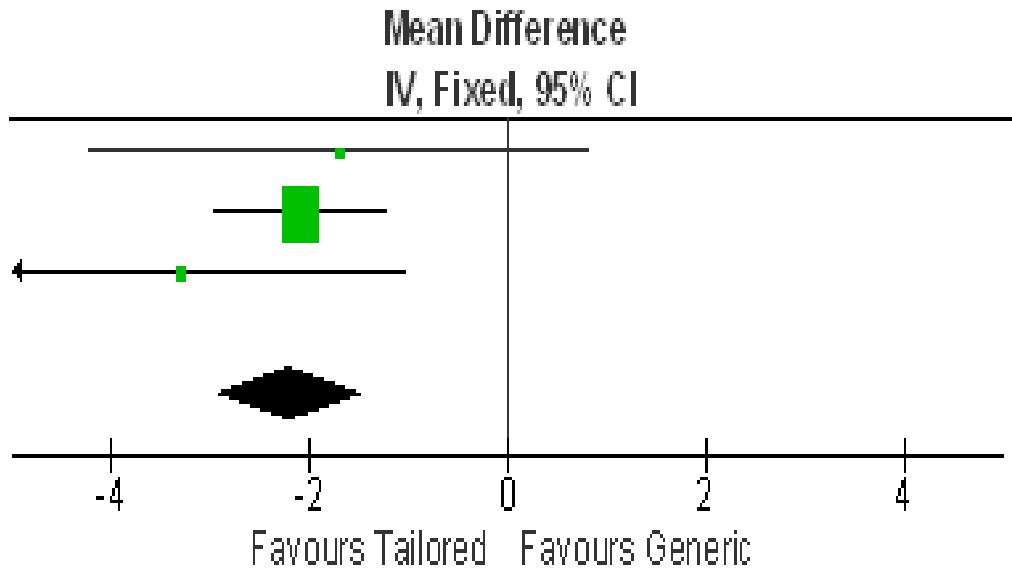




Results – % energy total fat; tailored vs. generic



Percentage of energy from total fat Tailored vs. generic education



- 3 studies (1,060 participants)
- Weighted mean difference (95% CI) = **-2.20 (-2.97, -1.43)**
- $P < 0.00001$
- ($I^2 = 0\%$; $p = 0.58$)

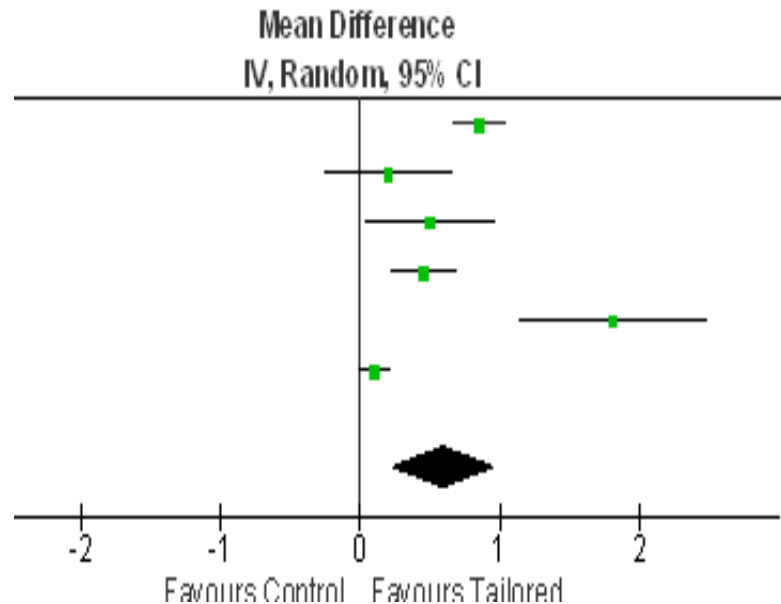


Results – fruits & veges; tailored vs. control

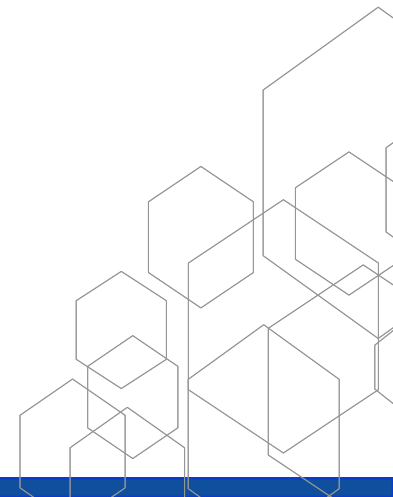
Servings of fruits and vegetables per day



Tailored vs. no nutrition education



- 6 studies (12,187 participants)
- Weighted mean difference (95% CI) = **0.59 (0.21, 0.98)**
- $P < 0.00001$
- ($I^2 = 93\%$; $p = 0.002$; random effects analysis)

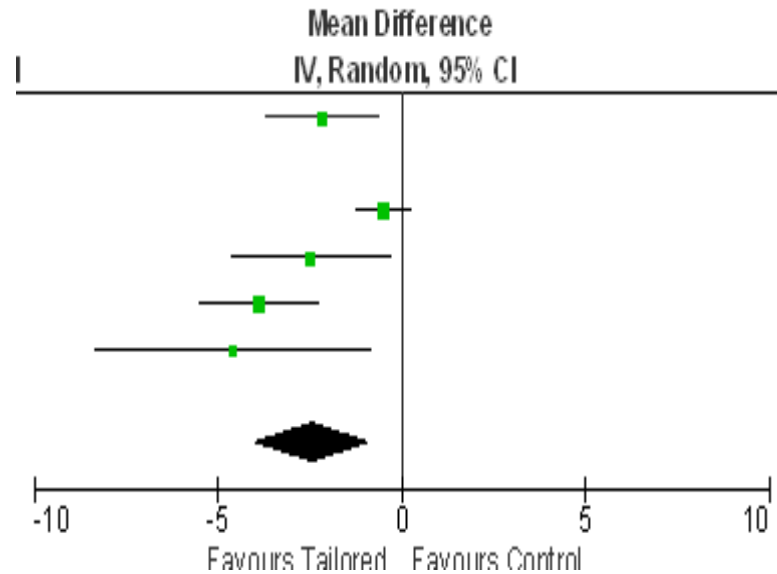




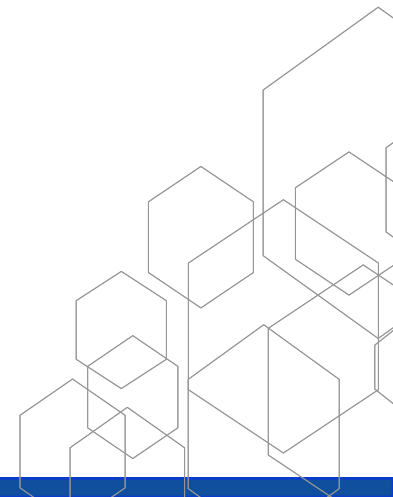
Results – % energy total fat; tailored vs. control



Percentage of energy from total fat Tailored vs. no nutrition education



- 6 studies (6,572 participants)
- Weighted mean difference (95% CI) = **-2.45 (-4.08, -0.82)**
- $P < 0.0005$
- ($I^2 = 80\%$; $p = 0.003$; random effects analysis)





Results – priority ethnic groups



- Daily servings fruits and veges
 - Three studies; all in favour of tailored nutrition education (mean difference ranged from ~ 0.2 to 1 serving/day)
- Total fat intake
 - Two studies; both found no difference between groups
- Other outcomes
 - Tailored nutrition education favourable for fruit intake alone (n=2), vegetable intake alone (n=2; mean differences ~ 0.7 and 0.2 servings/day)
 - No difference for saturated fat intake (n=1)

▪ 4 studies (5,981 participants)

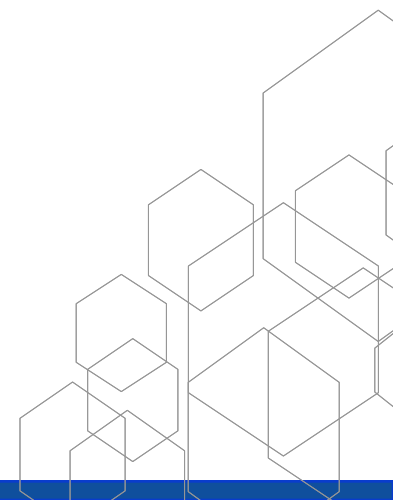
▪ 3 compared with no nutrition education; 1 with generic nutrition education



Results – low income

- Daily servings of fruits and veges
 - One study found ~0.3 serving per day more in tailored group
- Other outcomes
 - Same study found no difference for vegetables alone using an FFQ, but a significant difference using a ‘perceived daily intake’ question

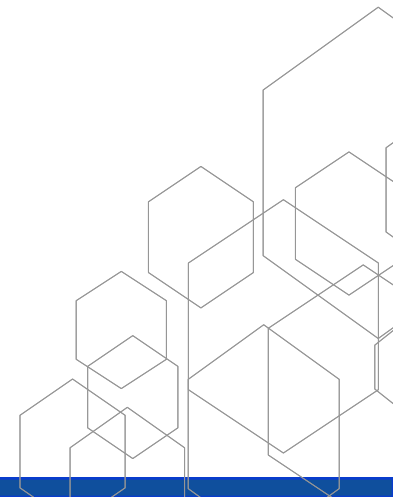
- 1 study (2,042 participants)
- Tailored vs. no nutrition education





Conclusion

- Tailored nutrition education a promising strategy for improving dietary intake of adults over the long-term (\geq six months)
- Also a promising strategy for priority ethnic and low-income groups
- Appeared more effective than generic nutrition education and no nutrition education





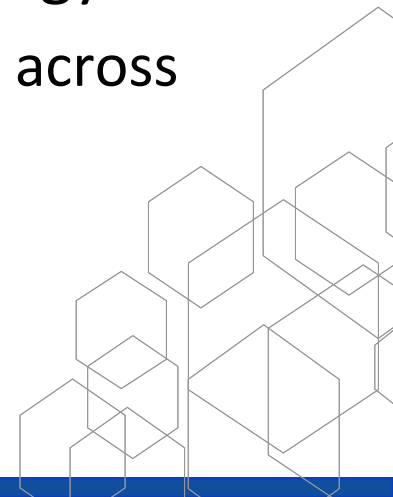
Limitations

- Multiple outcomes measured
- Lack of primary outcomes
- Self-reported dietary intakes
- Three trials had 'high' risk of bias
- Wide range of different outcomes
- Diversity in tailoring frameworks
- Possibility of publication bias



Implications

- Wide implementation of tailored nutrition education could:
 - Increase fruit and vegetable intake by $\sim 2/3$ serving per day
 - Between 27 and 69% of New Zealanders fail to meet current recommendations
 - Decrease total fat intake by $\sim 2.5\%$ total energy
 - Currently between 31 and 35% total energy across New Zealand ethnic groups





Future research

- Concentrate on key set of outcomes most relevant to nutrition-related disease
- Define one primary outcome and determine sample size *a-priori* based on change in this outcome
- Use more objective measures (shopping data and/or biomarkers)
- Adequately report methodology
- More high-quality research with priority groups
- Multiple settings (schools, workplaces etc..)





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Reference: Eyles H, Ni Mhurchu C. Does tailoring matter? A systematic review of the long-term effectiveness of tailored nutrition education for minority ethnic, low-income, and other adults. *Nutrition Reviews* [In press]

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