

Possible impact of the Tick Programme in New Zealand on selected nutrient intakes: tentative estimates and methodological complexities

Various countries allow health-related endorsements in the form of symbols or logos on packaged foods.¹⁻³ This is also the case for the Heart Foundation in Australia and New Zealand with Tick Programmes.⁴ There is some evidence in favour of such endorsement programmes from experiments,⁵ changes in food composition,^{6,7} and in terms of cost-effectiveness.⁸ However, the likely impact in the New Zealand setting is largely unquantified, with just one study published in 2002 on sodium reductions.⁴

To inform modelling work on the cost-effectiveness of cardiovascular disease prevention strategies, we aimed to estimate the difference in selected nutrients in the diet between: (i) New Zealand with the Tick Programme; and (ii) the counterfactual of no Tick Programme having existed in the country.

Methods—The average New Zealand adult intake of sodium, saturated fat and energy by food category (including separately for the Tick Programme and non-Tick programme foods) was estimated. This involved using “NutriTrack” data which were collected from the packages of all food and beverage products available for sale at two major supermarket chains (one store representing each) in Auckland between February and May 2012. This is a data source which has been used in previous nutrition studies.^{9,10}

Brand-specific food composition data from this source were then considered in light of previous food intake (national nutrition survey) data. We then identified the nutritional differences between Tick products and non-Tick products, and from this estimated what the New Zealand diet might have looked like, had there been no Tick products available. For additional details on *Methods* and associated references – see an online Report.¹¹

Results—There were 448 of the 8440 (5.3%) packaged food items in NutriTrack that displayed the Tick. Compared to a counterfactual of no Tick Programme, we tentatively estimated that saturated fat intake would be around 1.0 g/day less (3.2% [1.0 g/31.2 g] of daily intake of saturated fat for the average New Zealand adult), sodium around 38 mg/d less (1.1% less) and dietary energy around 72 kJ/d less (0.8% less).

Comments—We generated these results to facilitate health economic modelling work, particularly for sodium and saturated fat reduction. However, they are subject to many uncertainties which could mean that they either under or over-estimate the impact of the Tick Programme in New Zealand.

While we have discussed these limitations in more detail in an online Report,¹¹ we summarise these here. The first three points below would suggest that our analysis *overestimated* the benefits of the Tick Programme, and the subsequent four points, that it has *underestimated* it.

- *Limitations with the counterfactual used*—We assumed that if there was no Tick Programme, the nutrient composition of current processed foods would be as it is currently for non-Tick products. However, in the absence of the Tick Programme there could have been greater use of labelling for “reduced salt” and “reduced fat” foods (and some associated reformulation) by food companies.
- *Nature of the product comparisons*—Our analysis was often highly stratified in that we compared very low fat milks with the Tick, to very low fat milks without the Tick (and similarly within the other three types of fresh milk by fat level). However, in other cases we just, for example, compared all margarines with the Tick to with those without the Tick. Yet in the latter it could be that the more appropriate comparison would have been between: (i) the top quartile of “healthiest looking” non-Ticked margarines; and (ii) margarines with the Tick.
- *Compensatory consumer behaviour*—We have little information on how Tick foods are actually consumed. For example, it is possible that some people who are habituated to a high salt and saturated fat intake might partially compensate by adding additional salt or sauces to Tick foods (in cooking or at the table), if they do not taste salty or fatty enough. One experiment indicates that with a salt-reduced soup (both with and without the Tick) subjects tended to add salt.¹² Indeed, some respondents actually over-compensated with this salt addition relative to the sodium in the baseline soup. On the other hand, there is some evidence that once people are on lower salt diets they seem to actually prefer them, according to work that has measured the hedonic value of dietary salt.¹³
- *Limitations with the category comparisons*—Our analysis involved within-category comparisons of varying degrees of specificity (i.e., as detailed above regarding very low fat milks and margarines). But this meant that we did not capture the potential benefit of between-category shifts by consumers due to the Tick. For example, as no “whole milk” products had the Tick, we did not capture any potential benefits of people replacing whole milk with any types of lower fat milk with the Tick.
- *Wider product changes*—Our analysis also ignored potential wider pro-health product changes that food companies might undertake to achieve Tick certification. That is, they may reformulate a whole product range – while only actually getting the Tick logo certified for just some of these products (a pattern described previously for Australia⁶).
- *Competition effects*—It is possible that manufacturers who do not produce any Tick certified products may change the composition of some of their products to better compete with the Tick products of their competitors. Indeed, some non-Tick products in New Zealand supermarkets occasionally have such

labels as “reduced salt”. Nevertheless, some of this labelling may involve only very minor shifts in nutrient composition.

- *Legacy effects*—Our analysis only considered current products with the Tick. That is, it did not consider legacy benefits from the historical impact of the Tick Programme on sodium levels in bread in the past decade or longer.^{4,14} That is breads previously commonly had the Tick in New Zealand, but this is now rare.

In summary, we have produced tentative estimates for the impact of the Tick Programme in New Zealand on selected nutrient intakes. But as detailed above, there are many plausible reasons why these could ultimately be either underestimates or overestimates.

Perhaps the best way forward to evaluate the effectiveness of such food endorsement systems might be for randomised trials in virtual supermarket environments.¹⁵ In addition, before and after natural experiments could be done (on both food composition and food sales) in countries that widely adopted or legislated for food labelling or endorsement systems.

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References:

1. Lahti-Koski M, Helakorpi S, Olli M, et al. Awareness and use of the Heart Symbol by Finnish consumers. *Public Health Nutr* 2012;15:476–82.
2. Larsson I, Lissner L, Wilhelmsen L. The 'Green Keyhole' revisited: nutritional knowledge may influence food selection. *Eur J Clin Nutr* 1999;53:776–80.
3. Vyth EL, Steenhuis IH, Vlot JA, et al. Actual use of a front-of-pack nutrition logo in the supermarket: consumers' motives in food choice. *Public Health Nutr* 2010;13:1882–9.
4. Young L, Swinburn B. Impact of the Pick the Tick food information programme on the salt content of food in New Zealand. *Health Promot Int* 2002;17:13–9.
5. Borgmeier I, Westenhoefer J. Impact of different food label formats on healthiness evaluation and food choice of consumers: a randomized-controlled study. *BMC Public Health* 2009;9:184.
6. Williams P, McMahon A, Boustead R. A case study of sodium reduction in breakfast cereals and the impact of the Pick the Tick food information program in Australia. *Health Promot Int* 2003;18:51–6.

7. Vyth EL, Steenhuis IH, Roodenburg AJ, et al. Front-of-pack nutrition label stimulates healthier product development: a quantitative analysis. *Int J Behav Nutr Phys Act* 2010;7:65.
8. Cobiac LJ, Vos T, Veerman JL. Cost-effectiveness of interventions to reduce dietary salt intake. *Heart* 2010;96:1920–5.
9. Rosentreter SC, Eyles H, Ni Mhurchu C. Traffic lights and health claims: a comparative analysis of the nutrient profile of packaged foods available for sale in New Zealand supermarkets. *Aust N Z J Public Health* 2013;37:278–83.
10. Woodward E, Eyles H, Ni Mhurchu C. Key opportunities for sodium reduction in New Zealand processed foods. *Aust N Z J Public Health* 2012;36:84–9.
11. Wilson N, Nghiem N. Background Report for BODE3 Modelling on Estimating the Impact of the Tick Programme in New Zealand (a Heart Health Food Endorsement Programme). Wellington: University of Otago, Wellington, 2014.
<http://www.otago.ac.nz/wellington/otago071961.pdf>
12. Liem DG, Miremadi F, Zandstra EH, et al. Health labelling can influence taste perception and use of table salt for reduced-sodium products. *Public Health Nutr* 2012;15:2340–7.
13. Blais CA, Pangborn RM, Borhani NO, et al. Effect of dietary sodium restriction on taste responses to sodium chloride: a longitudinal study. *The Am J Clin Nutr* 1986;44:232–43.
14. Dunford EK, Eyles H, Ni Mhurchu C, et al. Changes in the sodium content of bread in Australia and New Zealand between 2007 and 2010: implications for policy. *Med J Aust* 2011;195:346–9.
15. Waterlander WE, Scarpa M, Lentz D, et al. The virtual supermarket: an innovative research tool to study consumer food purchasing behaviour. *BMC Public Health* 2011;11:589.