

# Effects of interpretive front-of-pack nutrition labels on food purchases: Starlight randomised controlled trial

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## DIET PROGRAMME

### Starlight trial

To evaluate the effects of front-of-pack nutrition labels on food purchases

Underway

### Virtual supermarket

To evaluate the effects of price changes on food purchases

to start Nov 2014 pending ethics approval

### NutriSales

To measure New Zealanders' exposure to salt, fat and sugar in the food supply

Underway

### KidsCam

To explore children's exposure to food marketing

Underway

### Modelling

To evaluate the effects of nutrition interventions on long-term health and inequalities

To start Nov 2015

<http://www.diet.auckland.ac.nz>

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## BACKGROUND

- Obesity and associated non-communicable diseases are major health challenges
- Nutrition labelling is a cost-effective intervention on population level
- Labels using graphics and symbols are better understood than traditional labels

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### Nutrition labels on pre-packaged foods: a systematic review

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Submitted 18 March 2010; Accepted 20 October 2010; First published online 18 January 2011

#### Abstract

*Objective:* To review research on consumer use and understanding of nutrition labels, as well as the impact of labelling on dietary habits.

*Design:* A systematic review was conducted by searching electronic databases. Relevant articles were screened by two reviewers and included if they met inclusion criteria, including eight methodological criteria. A total of 120 articles were included in the review, including cross-sectional surveys (*n* 96), experimental designs (*n* 17), 'natural experiments' (*n* 7) and longitudinal population-based surveys (*n* 2).

*Setting:* Articles covered seven jurisdictions: USA (*n* 88), Europe (*n* 12), Canada (*n* 9), Australia and New Zealand (*n* 4), Norway (*n* 2), Thailand (*n* 1) and Trinidad (*n* 1).

*Subjects:* Participants were from a wide range of age groups, socio-economic strata and geographical regions.

*Results:* Nutrition labels on pre-packaged foods are among the most prominent sources of nutrition information. Nutrition labels are perceived as a highly credible source of information and many consumers use nutrition labels to guide their selection of food products. Evidence also shows a consistent link between the use of nutrition labels and healthier diets. However, the use of labels varies considerably across subgroups, with lower use among children, adolescents and older adults who are obese. Research also highlights challenges in terms of consumer understanding and appropriate use of labelling information.

*Conclusions:* Nutrition labels on pre-packaged foods are a cost-effective population-level intervention with unparalleled reach. However, to capitalize on their potential, governments will need to explore new formats and different types of information content to ensure that nutrition information is accessible and understandable.

**Keywords**  
Nutrition  
Labels  
Food products  
Policy

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## RATIONALE

- Robust evidence on the effect of front-of-pack nutrition labelling on consumer purchasing behaviour is needed

NUTRITION  
REVIEWS

Lead Article

### Effects of front-of-package and shelf nutrition labeling systems on consumers

James C Hersey, Kelly C Wohlgenant, Joanne E Arsenaault, Katherine M Kosa, and Mary K Muth

*As standards are considered for nutrition front-of-package (FOP) and shelf-labeling systems in the United States, it is important to know what types of systems are most effective in conveying scientifically accurate and useful information to consumers. A systematic literature review identified 38 empirical studies on consumer response to FOP nutrition labeling and shelf labeling. Studies indicate that consumers can more easily interpret and select healthier products with nutrient-specific FOP nutrition labels that incorporate text and symbolic color to indicate nutrient levels rather than nutrient-specific labels that only emphasize numeric information, such as Guideline Daily Amounts expressed as percentages and/or grams. Summary systems may influence consumers to purchase healthier products. However, more research is needed to assess the influence of nutrient-specific labels on consumers' purchases. This review identified few studies that compared consumers' ability to select healthier products using nutrient-specific systems that incorporate text and color codes with multiple-level summary icons. More research is needed to determine the effects of FOP nutrition labeling on consumers' actual shopping behaviors and dietary intakes.*

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## TRIAL DESIGN

### Aim

- To assess the effects of two interpretive front-of-pack nutrition labels, compared with a non-interpretive label, on the healthiness of consumer food purchases

### Design

- Three-arm parallel randomised controlled trial (5 weeks)

### Setting

- NZ retail outlets selling packaged foods

### Recruitment target

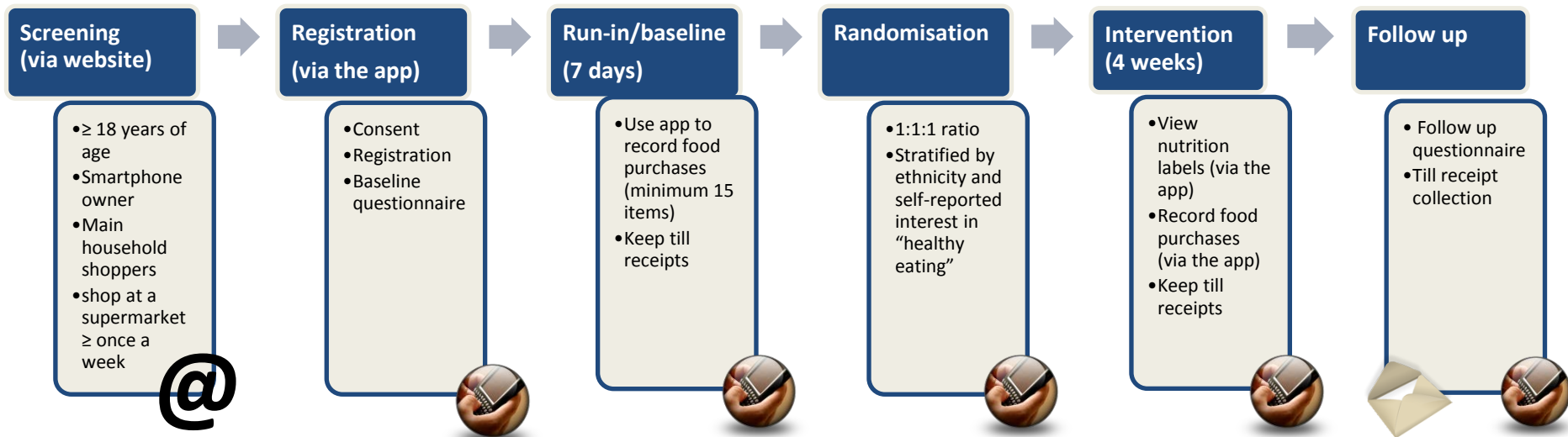
- N=1500 (500 Pacific; 500 Māori; 500 Other ethnicities)

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## FLOWCHART



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## PARTICIPANTS

### Inclusion criteria

≥ 18 years of age, currently living in NZ

Smartphone owner

Shop at a supermarket at least once a week

Regular main shopper for the household

Available for a continuous 5-week trial period

Able to read and understand English

### Exclusion criteria

Have used the “FoodSwitch” app

Only one person per household can take part

Failure to successfully complete the run-in phase



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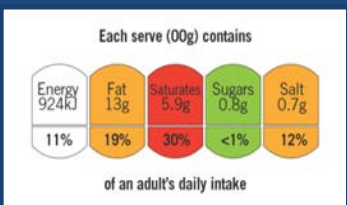
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# RANDOMISATION

**Target n=1500**  
*Stratified by: Ethnicity; self-reported interest in healthy eating*


**Traffic-Lights; Intervention arm (n=500)**



Each serve (00g) contains				
Energy	Fat	Saturates	Sugars	Salt
924kJ	13g	5.9g	0.8g	0.7g
11%	19%	30%	<1%	12%

of an adult's daily intake

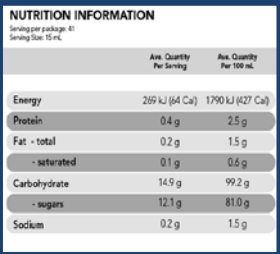
**Health Star Rating; Intervention arm (n=500)**



HEALTH STAR RATING	ENERGY	SAT FAT	SUGARS	SODIUM
3.5	0% DI*	0.0g	0.0g	000mg

PER 100g

**Nutrition Information Panel; control arm (n=500)**



NUTRITION INFORMATION		
Serving per package: 61		
Serving Size: 10 mL		
	Avg. Quantity Per Serving	Avg. Quantity Per 100 mL
Energy	269 kJ (64 Cal)	1790 kJ (427 Cal)
Protein	0.4 g	2.5 g
Fat - total	0.2 g	1.5 g
- saturated	0.1 g	0.6 g
Carbohydrate	14.9 g	99.2 g
- sugars	12.1 g	81.0 g
Sodium	0.2 g	1.5 g

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## OUTCOMES

### Primary

Mean nutrient profiling score for all food and beverage products purchased over the four-week intervention period

### Secondary

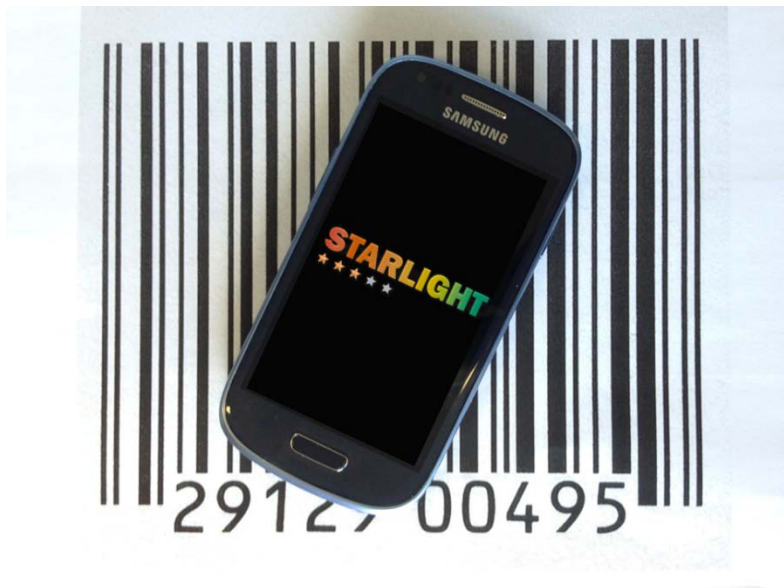
- 1) Saturated fat, total sugar, sodium and energy content of food purchases;
- 2) Food expenditure;
- 3) Labelling profile of food purchases (mean number of Health Star Rating stars and proportion of red, green and amber traffic lights);
- 4) Nutrient profiling score over time;
- 5) Nutrient profiling score of key food categories;
- 6) Mean nutrient profiling score of the 3 nutrient profiling score criterion food categories;
- 7) Purchases of unpackaged foods;
- 8) Self-reported nutrition knowledge;
- 9) Recorded use of assigned labelling system.

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## STARLIGHT APP



### Functionality

- Consent
- Administration of questionnaires (baseline and follow up)
- Randomisation
- Intervention (nutrition labels) delivery
- Data collection:
  - Record food purchases
  - Photograph till receipts
- Automatic reminder messages

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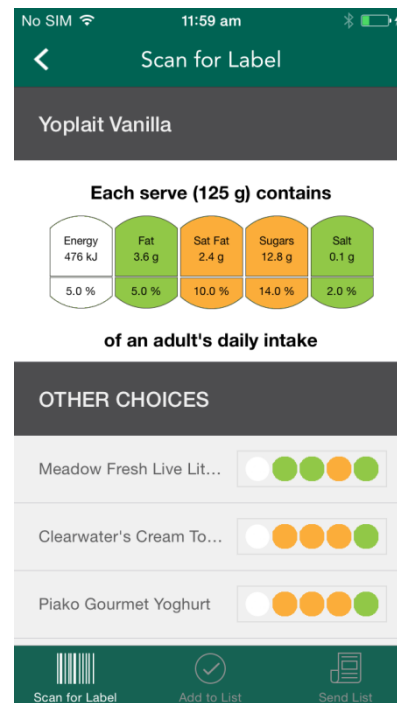
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## STARLIGHT APP: DELIVERY OF NUTRITION LABELS

- Step 1** Participants scan the barcode using smartphone camera
- Step 2** Label is displayed on screen
- Step 3** Also shows a random selection of other foods in the same food category

**Note:** nutrition label viewing function is inactive during baseline



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## STARLIGHT APP: RECORDING FOOD PURCHASES

- Step 1** Participants scan the barcode of purchased food products using smartphone camera
- Step 2** Scanned products are added to list
- Step 3** Participants are able to review and edit the list
- Step 4** List is automatically transmitted to the study database



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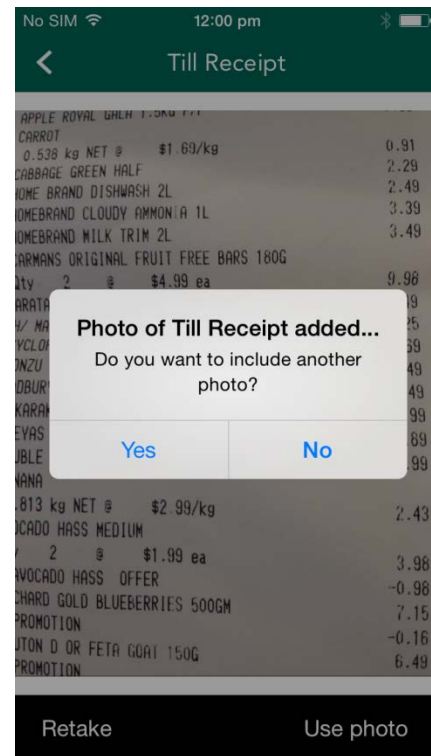
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## STARLIGHT APP: ATTACHING TILL RECEIPT IMAGE

**Step 1** Participants are reminded to attached a corresponding till receipt

**Step 2** Participants take photos using the smartphone camera

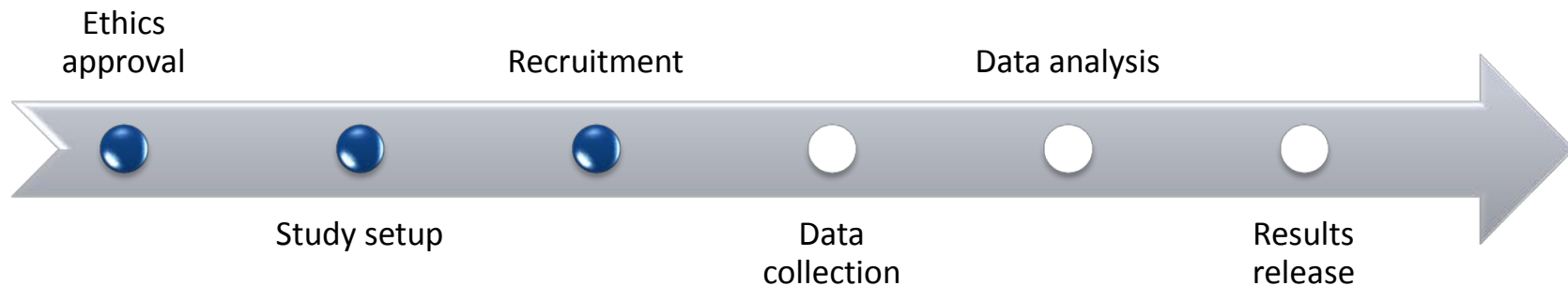


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## TIMELINES/ PROGRESS



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## CONCLUSION/DISCUSSION

- This randomised, controlled trial will provide evidence on the effects of interpretive front-of-pack nutrition labels on the healthiness of consumer food purchases in the real world
- Results are expected late 2015 – early 2016



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## We are looking for participants



To join visit: <http://diet.nihi.auckland.ac.nz/content/starlight>

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Hereni Marshall, Toi Tangata, Auckland

Dr Ofa Dewes, Department of Pacific Health, University of Auckland

Dr Peter Scarborough, Oxford University

Professor Tony Blakely, University of Otago

DIET Programme Advisory Group

Project funding

Māori consultation and recruitment

Māori consultation and recruitment

Māori consultation and recruitment

Māori consultation and recruitment

Pacific consultation and recruitment

Advice on statistical analysis

Advice on statistical analysis

Feedback on the study protocol