



Dietitians' perceptions of the healthiness of packaged food



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ABSTRACT

The aim of this cross-sectional study was to determine the factors that influence Australian dietitians' perceptions of the healthiness of a sample of packaged foods. Participant dietitians ($n = 120$) rated the healthiness (1, less healthy to 10, more healthy), of seven packaged foods (bread, confectionary, breakfast cereal, flavoured yoghurt, curry, spread and crumble) based on information obtained from an ingredient list and nutrient information panel (NIP). Influences on each food's rating were explored via Likert-scale and open-response questions. There was variation in the healthiness rating of all foods, however, least so for confectionary and crumble. Bread ($M = 7.39 \pm 1.44$) and confectionary ($M = 1.33 \pm 0.69$) were rated the most and least healthy foods respectively. Crumble was rated significantly ($p = 0.03$) healthier by those with more experience (≥ 6 vs. ≤ 5 years). No other differences were detected. Highly reported influences on healthiness were sugar, total fat, sodium and saturated fat values and the ingredient list. Content analysis identified 13 categories of information not provided on the NIP that influenced participants' ratings. References to the Australian Guide to Healthy Eating food groups, micronutrients not listed as ingredients, comparisons to other foods, and fibre were most common among the sample. These results have implications for research or public health policy where expert opinion of the healthiness of food is used as a reference measure.

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1. Introduction

Internationally, Registered Dietitians are considered the experts in diet and nutrition ([Academy of Nutrition and Dietetics, 2016](#); [Dietitians of Canada, 2016](#); [The British Dietetic Association, 2014](#)) and in Australia these experts are known as Accredited Practising Dietitians (APD). Recognition as an APD requires a professionally accredited university degree and ongoing professional development ([Dietitians Association of Australia, 2015](#)). The scope of practice of dietitians includes providing up-to-date evidenced-based dietary and nutritional advice on personal and population levels ([Dietitians Association of Australia](#)).

In Australia, the Australian Guide to Healthy Eating (AGHE) provides a food group based system for classifying foods ([National Health and Medical Research Council, 2013](#)). The AGHE describes five core food groups (i.e., vegetables and legumes/beans; fruit; grain (cereal) foods mostly wholegrain and/or high cereal fibre varieties; lean meats and poultry, fish, eggs, nuts and seeds, and/or legumes/beans; and milk, yoghurt, cheese and/or alternatives) and provides an allowance for unsaturated spreads and oils as part of a healthy diet ([National Health and Medical Research Council, 2013](#)).

Foods high in saturated fats, sugars, salt or alcohol are termed discretionary foods, and are classified as unnecessary for a healthy diet ([National Health and Medical Research Council, 2013](#)). The AGHE provides some guidance on the classification of individual foods into either healthy or less healthy choices. However, misclassification of foods may result when using the AGHE as no clear evidence exists on the healthiness of individual foods. In many cases, dietitians are called upon to provide expert opinion about the health value of individual foods where no clear evidence-base exists ([Cloutier, Mongeau, Pageau, & Provencher, 2013](#); [Martin, Beshears, Milkman, Bazerman, & Sutherland, 2009](#); [Scarborough, Boxer, 2007](#); [Scarborough, Rayner, 2007](#)).

One area expert opinion has been used is in the development and validation of nutrient profiling (NP) models ([Azais-Braesco, Goffi, & Labouze, 2006](#); [Martin et al., 2009](#); [Scarborough, Boxer, 2007](#); [Scarborough, Rayner, 2007](#); [Townsend, 2010](#)). Nutrient profiling models are frequently used to inform front-of-package nutrition labelling systems which are designed to inform consumers of a food's health value ([Van Der Bend et al., 2014](#)). Currently, there is no gold standard for determining the healthiness of individual foods ([Townsend, 2010](#)). In this absence, consensus of nutrition professionals' (including dietitians') perceptions of the healthiness of food are commonly utilised to validate NP models ([Azais-Braesco](#)

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et al., 2006; Martin et al., 2009; Scarborough, Boxer, 2007; Scarborough, Rayner, 2007; Townsend, 2010). Validation testing using professional perceptions of the healthiness of foods is highly subjective and open to bias. The understanding of dietitians, or more broadly nutrition professionals', perceptions of the healthiness of food has primarily emerged from two studies associated with NP research (Martin et al., 2009; Scarborough, Boxer, 2007; Scarborough, Rayner, 2007). The first study by Scarborough, Boxer (2007); Scarborough, Rayner (2007) investigated the factors that influenced the healthiness rating of 120 foods and beverages (1–6 scale) by 702 British nutrition professionals (Scarborough, Boxer, 2007; Scarborough, Rayner, 2007). The purpose of this study was the development of a reference standard for comparing and validating NP models (Scarborough, Boxer, 2007; Scarborough, Rayner, 2007). The second study conducted in 2009, by Martin et al., utilised the average healthiness ratings of 13 American nutrition experts to develop a NP algorithm (Martin et al., 2009).

Both studies found that less than half of the variation in responses could be explained by the content of the nutrients listed (Martin et al., 2009; Scarborough, Boxer, 2007; Scarborough, Rayner, 2007). Furthermore, there was considerable variation in the healthiness ratings, particularly in responses for combination foods (i.e., tomato chutney and takeaway prawn curry) and those foods that scored midscale (Scarborough, Boxer, 2007; Scarborough, Rayner, 2007). The addition of the keywords; fruit or vegetable, takeaway, fried and wholemeal in the food's name along with the content of fat and total sugars accounted for 64% of response variation (Scarborough, Boxer, 2007; Scarborough, Rayner, 2007). Personal characteristics such as gender, age, years of professional experience, employment area and association membership (British Dietetic Association or Nutrition Society) were also found to influence participants' healthiness ratings for multiple foods (Scarborough, Boxer, 2007; Scarborough, Rayner, 2007).

A subsequent study conducted in 2014 on nutrition professionals' perceptions of dairy products and their alternatives also found non-nutrient related factors that affect healthiness perceptions (Eržen, Kač, & Pravst, 2014). These included; the presence of additives, processing techniques, risks of soya allergy and genetically modified organisms (Eržen et al., 2014). The reasons why participants reported these factors as important was not investigated (Eržen et al., 2014). Dietitians' perceptions of the healthiness of food have been emphasised as a priority research area due to their expert status and the use of their opinion in research (Paquette, 2005). While there has been some research on this topic, the knowledge in this area has largely focused on nutrient content. Very little is known about the factors outside of the nutrient content of food that influence professional perception of healthiness. Therefore, the aims of this research were to; 1) determine the factors that influence Australian dietitians' perceptions of the healthiness of a sample of packaged foods; 2) investigate the variation in their healthiness ratings of each food; and, 3) investigate differences in ratings based on age, years of experience as a dietitian and primary area of employment.

2. Methods

2.1. Study design

This cross-sectional observational study utilised an online survey (surveymonkey.com) for data collection and adhered to the STROBE (STrengthening the Reporting of OBServational studies in Epidemiology) guidelines (Von Elm et al., 2007).

2.2. Survey

The survey was developed by the authors and was informed by a similar study that examined nutrition professionals' food healthiness ratings (Scarborough, Boxer, 2007; Scarborough, Rayner, 2007). The survey consisted of four sections: 1) Section A-the healthiness rating of each packaged food item; 2) Section B- factors influencing perceived healthiness of each packaged food item; 3) Section C- participants' general perceptions of the healthiness of packaged food; and 4) Section D-participants' demographic characteristics. Due to the scope of this paper, only the results of Sections A, B and D are presented.

In Section A, participants were asked to rate the healthiness of seven packaged food items (bread, confectionary, breakfast cereal, flavoured yoghurt, curry, spread and crumble) on a 10-point scale, 1 (*less healthy*) to 10 (*more healthy*). As the purpose of our study was to explore the factors that inform dietitians' perceptions of the 'healthiness' of packaged foods, the items selected for this study were not meant to be representative of all foods or food groups. Criteria for selecting items were exclusion of beverages and takeaway items and inclusion of multi-ingredient packaged items. Breakfast cereal, flavoured yoghurt and spread were selected due to receiving higher variation in their healthiness ratings identified in the study by Scarborough et al. (Scarborough, Boxer, 2007; Scarborough, Rayner, 2007). Bread and confectionary had minimal variation in their ratings and thus were selected as benchmark foods (Scarborough, Boxer, 2007; Scarborough, Rayner, 2007). The final two foods, curry and crumble were selected as they are foods commonly available for sale as heat-and-eat meal options. Food items selected for use in the survey were derived from real food items available for purchase at major Australian supermarkets. The authors used their professional judgement to ensure that the selected Australian foods were representative of the items they were based on from the study by Scarborough et al.

Each food item was named generically to reduce the potential bias that branding may introduce to the perceptions of healthiness. The generic name, and information provided by the Nutrition Information Panel (NIP) and ingredient list were used for each food item in the survey. The nutrient values (per 100g) for the six mandatory nutrients required to be displayed by Australian food labelling regulation (protein (g), total fat (g), saturated fat (g), carbohydrates (g), sugar (g) and sodium (mg)) plus energy (kJ) were included on the NIP, and the ingredients were listed in order by weight (Food Standards Australia New Zealand).

Section B of the survey included Likert-scale and open-response questions developed by the authors for the purpose of this study (Table 1). Prior to asking each set of questions, participants were reminded of their response on the healthiness rating for the relevant food item. The participants were prevented from moving backwards through the survey and possibly changing their responses. The questions in Section B examined the influence information presented on the label has on the perception of the healthiness of each food item. The final questions that made up this section of the survey explored the influence of other components not listed on the NIP and a text area for participants to specify the details of these other components.

Demographic data was collected and included participants' age, gender, Australian state or territory location, employment status, primary dietetic employment area and years of experience as a dietitian. The final survey was piloted by four APDs to improve face and content validity, survey length and design, and was adapted accordingly.

Participants were instructed to consider the information and questions in the context of general health and not specific to medical nutrition therapy. The participants were also instructed to consider each food separately and in the context of all foods and not just packaged foods or a single food category. Packaged food was

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