



Research report

Real-life setting in data collection. The role of nutrition knowledge whilst selecting food products for weight management purposes in a supermarket environment [☆]



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ABSTRACT

The aim was to explore the role of consumers' nutrition knowledge while selecting foods for weight management and the predominating food selection factors by combining quantitative and qualitative methodology in a real-life setting during two consecutive shopping tasks given in a supermarket. Thirty-six consumers were given a list of 11 products and asked to think-aloud while selecting (i) a product they usually buy and (ii) a product they use for weight management. After the consecutive shopping tasks, the subjects were interviewed and asked to answer a nutrition knowledge questionnaire. The subjects were categorized by the difference in the energy contents of their selections and the food selection criteria. The energy contents of the selections for weight management were reduced by 10–46%. Ten subjects with the greatest difference between the energy contents of their selections had higher level in nutrition knowledge and mentioned less nutritional issues during the selections than ten subjects with the smallest such differences. Taste was an important product selection criterion by the former group, while the latter focused primarily on price. Nutrition knowledge is interrelated with personal factors and selection goals. It is not necessarily utilized consistently when selecting food products.

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Introduction

In order to understand consumer behavior, it is essential to obtain reliable information collected in real-life settings (Bettman, Luce, & Payne, 1998; Kingstone, Smilek, Ritsic, Kelland-Friesen, &

Eastwood, 2003). The ethnographical approach requires a combination of methods and equipment for consumer research (Fetterman, 2010; Hammersley & Atkinson, 2007). The Verbal Analysis Protocol (VAP), also known as the “think aloud method” (Ericsson, 2006; Ericsson & Simon, 1993), offers a promising approach for studying consumer behavior (Chase, Reicks, Smith, Henry, & Reimer, 2003; Henry et al., 2003; Higginson, Rayner, Draper, & Kirk, 2002; Rayner, Boaz, & Higginson, 2001; Reicks et al., 2003). In the present study, the VAP was combined with wireless audiovisual observation (WAVO) by using web cameras worn on the subject's head and attached to the shopping cart, to examine choice behavior at the supermarket, as described by Saarela et al., 2013.

Obesity and weight management are strongly affected by the consumer's food selection (Raynor et al., 2011). Consumer behavior during product selection is affected by extrinsic factors such as package labels and price, and also by intrinsic factors such as attitude, previous behavior patterns and experiences, expertise, and level of knowledge regarding food and nutrition (Grunert, 2002, 2006; Sobal, Bisogni, Devine, & Jastran, 2006; Solomon, Bamossy, Askegaard, & Hogg, 2006).

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Previous studies on the relationship between nutrition knowledge and dietary behavior have yielded conflicting results. For instance, Stafleu, Van Staveren, De Graaf, & Burema, 1996 found no statistically significant correlations between nutrition knowledge and fat intake in three generations of Dutch women, while Räsänen et al. (2001) reported that the correlation between nutrition knowledge and food selection was weak in Finnish families with children who had been given nutrition counseling.

On the other hand, the results of numerous other studies do suggest that nutrition knowledge has significant effects on food habits and food selection (De Vriendt, Matthys, Verbeke, Pynaert, & De Henauw, 2009; Fitzgerald, Damio, Segura-Pérez, & Pérez-Escamilla, 2008; Hendrie, Cox, & Coveney, 2008a; Klohe-Lehman et al., 2006; Nuss, Freeland-Graves, Clarke, Klohe-Lehman, & Milani, 2007; Strychar, Potvin, Pineault, Pineau, & Prévost, 1993; Wardle, Parmenter, & Waller, 2000). Strychar et al., 1993 reported a correlation between nutrition knowledge and the frequency of consumption of high fat foods in Canadian supermarket customers ($N = 3432$). A similar relationship between nutrition knowledge and food selection was observed by Wardle et al. in a postal survey of 1040 adult Englishmen conducted to examine the relationship between nutrition knowledge and consumption of fat, vegetables and fruit (Wardle et al., 2000). Similar findings were obtained from interviews of 201 Latin American adults regarding their nutrition knowledge and food intake patterns (Fitzgerald et al., 2008), a questionnaire study administered to 140 American women about their nutrition knowledge and their demographic variables (Nuss et al., 2007), and a study on 803 Belgian women (De Vriendt et al., 2009). In addition, results from weight loss trials indicate that it may be beneficial to incorporate nutrition education into the advice given during weight management counseling (Klohe-Lehman et al., 2006).

There is considerable variation between different groups of consumers in terms of their understanding of dietary recommendations, the energy contents of foods, and how to select foods to meet their dietary needs (Hendrie, Coveney, & Cox, 2008b). It may be that the apparent discrepancies between the various reported correlations between nutrition knowledge and shopping behavior is partly due to the use of interviews and surveys to gather data rather than studies of consumers in authentic shopping environments (De Vriendt et al., 2009; Fitzgerald et al., 2008; Hendrie et al., 2008a; Klohe-Lehman et al., 2006; Nuss et al., 2007; Stafleu et al., 1996; Wardle et al., 2000).

In the study reported herein, we describe an approach of collecting data in a real-life setting and simultaneously to explore the role of nutrition knowledge in selecting foods for weight management in a supermarket environment. In addition, we studied criteria for food choices in the weight management context. The study focused on measuring individual and product variation in food product selections, and on implementation of consumers' nutrition knowledge to show as an example how to combine both qualitative and quantitative data.

Materials and methods

Study subjects

The study was conducted in a supermarket in Kuopio, Finland, where the subjects usually shop for their food. Thirty-six consumers were recruited from a sample of 367 supermarket shoppers who had participated in a weight management survey in the same supermarket in November–December 2009. The subjects were all adults and were selected to cover a wide range of demographic and weight management backgrounds, corresponding to the profile of our survey responses. The study was approved by the

Research Ethics Committee of the University Hospital of Kuopio (114/2009) before the start of data collection.

Both male ($N = 14$) and female ($N = 22$) subjects were examined, with ages ranging from 18 to 65 years; the average subject age was 44. Half of the subjects came from families with children, about 50% of the subjects had received university level education, and 2/3 of them were employed. The subjects examined in this work had the same gender distribution as the study sample from which they were derived but were slightly younger and better educated. The subjects were screened to represent individuals with varied intention to lose weight and willingness to make an effort to maintain their current weight or to slim down (Table 1).

The supermarket field study

In January–February 2010, the subjects were contacted personally by telephone to arrange their participation in the field study, which took place between April and May 2010. Data were collected at the supermarket in Kuopio, Finland where the first phase of the recruitment process was conducted, i.e. where the survey was administered.

The food choice behavior of 36 subjects in relation to products selected and nutritional issues mentioned was studied using VAP combined with manual and wireless audiovisual observation, WAVO and interviews. A similar study design has been used by Rayner et al., 2001. However, they did not use WAVO techniques for data collection. In our study the subjects and the researcher were equipped with small, light and inconspicuous wires for data documentation. The researcher walked with the subjects and responded to the subjects only by non-verbal signals or by making a neutral comment according to the instructions by Ericsson (2006) and Ericsson and Simon (1993). The protocol in authentic shopping environments, the “think aloud” method, and methods and technologies for observation are described in more detail by Saarela, (2013), Saarela et al. (2013).

The subjects were asked to perform two rounds of shopping with a shopping list of 11 items and encouraged to think aloud while purchasing the foods. The 11 items on the shopping list (see Fig. 1, also Table 5) were selected based on Finnish eating habits, representing foods that are typical sources of energy and fat in the Finnish diet.

During the first round, the subjects were asked to select the products that they would usually buy from each of the 11 categories specified. The products selected in this round were referred to as the typical selection. To ensure that the subjects selected items they would choose under normal conditions, they were interviewed immediately prior to the experiment and asked questions such as: “Please describe your typical shopping list – what does it include? What products do you buy every time you go shopping? When do you pay attention to special offers?”

The products selected in the second round were referred to as the weight management selection. During this round, the subjects were asked to think about their choices in terms of weight management. The subjects were instructed to “Choose products that you have used when trying to manage your weight or that you think would be suitable for managing your weight”. No other instructions regarding product selection were given even if the subject asked for help.

After the two shopping rounds, the subjects were given a nutrition knowledge questionnaire to be completed by themselves in a quiet room (Appendix 1). They were then asked to assess the suitability of their selected products for weight management purposes using a 5-point scale (1 = extremely poor for weight management, 5 = extremely good). They were also asked to rate the frequency with which they bought the products they had selected during their regular shopping trips. The scale used in the latter case

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