

Snacks With Nutrition Labels: Tastiness Perception, Healthiness Perception, and Willingness to Pay by Norwegian Adolescents

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ABSTRACT

Objective: Consumers tend to have the perception that healthy equals less tasty. This study aimed to identify whether information provided by the Keyhole symbol, a widely used front-of-package symbol in Nordic countries to indicate nutritional content, and percent daily values (%DVs) affect Norwegian adolescents' perception of the healthiness of snacks and their intention to buy them.

Design: Two tasks were used to evaluate adolescents' perception of snacks with the Keyhole symbol: with %DVs or with no nutrition label. A third task was used to test their abilities to use %DVs (pairwise selections). A survey obtained personal attributes.

Participants: A total of 566 Norwegian adolescents.

Main Outcome Measures: Taste perception, health perception, and ability to use %DVs.

Analysis: Linear mixed models and logistic models that tested effects of labels and personal attributes on main outcome measures.

Results: The Keyhole symbol increased health perception without influencing taste perception of snacks. Norwegian adolescents had limited abilities to use information from the %DVs correctly to identify healthier foods.

Conclusions and Implications: Norwegian adolescents had a positive perception of the Keyhole symbols. Keyhole symbols as a simple, heuristic front-of-package label have potential as an information strategy that may influence self-efficacy in promoting healthy snack choices among adolescents.

Key Words: adolescents, nutrition labels, snacks, Norway (*J Nutr Educ Behav.* 2015; ■:1-8.)

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INTRODUCTION

Nutrition labels are cost-effective tools in the battle against obesity.^{1,2} Many different nutrition labels are available, but previous studies indicate that consumers prefer simplified front-of-package (FOP) labels³ that summarize nutritional information as a supplement to quantitative nutrition labels provided on the back of food packages. There are various kinds of FOP labels:

for instance, traffic lights and the Nordic Keyhole symbol. For more than 20 years, the Keyhole symbol has been widely used in the Nordic countries to support a healthier diet (Figure 1).⁴ Over 90% of Nordic consumers recognize it.⁵

Front-of-package labels are simple, direct, heuristic, and easy to use in decision making.⁶ Interpretation of the Keyhole symbol and other FOP labels does not require advanced nutrition

knowledge or high cognitive capacity.⁶ Front-of-package labels may remove some obstacles for consumers with low self-efficacy or even increase their self-efficacy. Self-efficacy refers to a sense of control over one's behavior.^{7,8} It reflects consumers' confidence in their ability to control their nutrition and for example, to choose healthier options. Therefore, FOP labels have the potential to increase nutritional self-efficacy of consumers more so than quantitative nutrition labels, which, owing to their complexity, may even reduce consumer confidence in making healthy choices. For example, information on percent daily values (%DV), which corresponds to the percentage of the daily requirements or allowance for a particular nutrient based on a 2,000-cal diet, requires interpretation. Consumers with limited nutrition knowledge may be unable to understand or use quantitative nutrition labels to identify healthier options.⁹

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Figure 1. Keyhole symbol. The Keyhole symbol aims to help consumers identify healthier options. A product with the Keyhole symbol is a healthy product in its own food category (eg, it is a healthy yogurt that contains less fat than other types of yogurt). This product meets criteria such as less fat, less sugar, less salt, or more fiber.

Nutrition labels are sometimes associated with a reduced perception of product tastiness among consumers. Nordic adults reported a decrease in taste perception of foods with health claims.¹⁰ Consumers tend to have the perception that healthy equals less tasty, which affects taste inference. If consumers perceive a product to be healthy because of its nutrition label, their taste perception of this product may decrease. The decrease in taste perception lowers the expected quality of the product, and then limits consumers' intention to buy the product.¹¹ This process can be a barrier for promoting the use of nutrition labels for healthy food choices. The perception that healthy equals less tasty has not been tested with the Keyhole symbol.

This study targeted nutrition labels on snacks. In Nordic countries, snacks and light meals are common and contribute to 25% to 35% of daily energy intake.¹² There is a debate regarding snack consumption and subsequent weight gain of consumers.^{13,14} However, considering that most snacks are of poor nutritional quality, unhealthy snack consumption should be limited.¹³ To the authors' knowledge, the impact of nutrition labels on adolescents' perception of snacks has not been evaluated previously.

Adolescents constitute a consumer group that may be characterized by limited nutrition knowledge and limited experience in food shopping. The purpose of the study was to identify whether the Keyhole symbol and the %DVs affected adolescent consumers' perception and intention to buy snacks with such labels. It also investigated whether Norwegian adolescents could obtain nutrition information from the %DVs to identify healthier foods. The researchers tested 2 hypotheses: The Keyhole symbol decreases taste perception in adolescents, and adolescents in Norway would prefer the Keyhole symbol over %DVs.

METHODS

Sampling

This study was conducted in Akershus County, which is the second largest county by population in Norway. Akershus County has food and school environments that represent the densely populated regions around the capital of Norway. This study covered the large differences in socioeconomic status among the north, east, and west regions of the county.^{15,16}

The authors sent invitations to school principals and leaders of 36 high schools in Akershus County. School principals and school leaders decided whether the schools would like to participate and which classes were available. Students in these classes were free to choose whether they wanted to participate in the study.

Informed consent was obtained from the adolescents and from the parents of those who were aged < 16 years. This study did not directly or indirectly identify personal data. According to the regulations issued by the Data Protection Official for Research in Norway,¹⁷ this type of study did not require approval from an ethics committee.

Procedure and Measures

The adolescents had 1 school period (40 minutes) to finish 3 tasks (25 minutes) and 1 survey (15 minutes). They received an introduction that described the tasks and they completed questions individually. The study was conducted in Norwegian. A flowchart

(Figure 2) shows the snack labels and the 3 tasks.

Ten snacks were used in this study, each of which had 3 types of labels: (1) Plain labels that included product name, best-before date, weight of the product, ingredient list, food additives, and bar codes; (2) plain labels plus the Keyhole symbols; and (3) plain labels plus %DVs in nutrition facts (Figure 2A). The 10 snacks were lemon soda, ice cream, chips, teacake, milk flower candy, dark chocolate, fruit, yogurt, nuts, and baby carrots. Nine of the 10 snacks covered known healthy and unhealthy snacks, and 1 of the 10 snacks—milk flower candy—was not familiar to Norwegian adolescents. Paper labels were distributed to adolescents before each task.

Task 1. For each of the 10 snacks, 1 of the 3 label types (plain, Keyhole, or %DVs) was randomly assigned to each adolescent (Figure 2B).^{18,19} Thus, each participant saw 10 labels: 4 plain, 3 Keyhole, and 3 %DVs, 1 label per snack, but the combination of label types among the 10 products varied among participants. Adolescents were asked to examine the labels and answer questions regarding how tasty and how healthy they thought these snacks were, using 9-point scales. They also indicated their intention of buying the snacks (*yes* or *no*).

Task 2. Because of limited time, the adolescents examined only 3 snacks (ice cream, chips, and yogurt) in task 2 (Figure 2C).²⁰ These 3 snacks are the most common in Norway. The measured response was willingness to pay (WTP) for the snacks. To investigate how much adolescents liked the labels, the authors chose yogurt, because it is a relatively health-neutral product (confirmed in this study, because it ranked as neither very healthy nor unhealthy in the healthiness score given by participants). Therefore, it was used to test both whether the yogurt labels were liked and whether the yogurt was liked.²⁰ The adolescents were told that the average price of the snacks was 25 Norwegian Kroner (NOK). They were asked how much they were willing to pay for the snack on a scale from 10 to 40 NOK in 3-NOK increments. The adolescents provided

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