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Use of nutritional labeling by residents of Madrid, Spain

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Abstract

Objetives: To describe the interest, comprehension level, and use of nutritional labeling by consumers according to sociodemographic characteristics.

Design: Cross-sectional study of consumers recruited in 5 stores of the main supermarket chains in Madrid. Interviewers collected information about the interest, comprehension, and use of nutritional labeling using a questionnaire designed for this purpose. Analyses examined the frequency of the variables of interest. Differences were tested using the Chi-square statistic.

Setting: Madrid, Spain.

Subjects: A random sample of 299 consumers (response rate: 80.6%).

Results: In our sample, 38.8% of consumers regularly read the nutritional labeling before making a purchase (45% of women vs. 30% in men; $p=0.03$) and the most common reason reported was choosing healthier products (81.3%). Information on additives and fats was of most interest to these consumers (55% and 50%, respectively).

Lack of time (38.9%), lack of interest (27.1%), and reading difficulties (18.1%) were the most common reasons given for not reading labels. Over half (52.4%) of consumers reported completely understanding the nutritional information on labels and 20.5% reported using such information for dietary planning.

Conclusions: Reported interest, comprehension, and use of nutritional labeling were relatively high among consumers residing in Madrid, and their main goal was picking healthier products. However, not only there are still barriers to reading the information, but also the information most relevant to health is not always read or understood. Thus, interventions to increase nutritional labeling comprehension and use are required in order to facilitate the making of healthier choices by consumers.

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Design: Cross-sectional. Interviewers collected information about the interest, comprehension, and use of nutritional labeling using a questionnaire designed for this purpose. Analyses examined the frequency of the variables of interest. Differences were examined using χ^2 test.

Setting: Study of a random sample recruited in 5 stores of the main supermarket chains in the city.

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Conclusions: Reported interest, comprehension, and use of nutritional labeling were relatively high among consumers residing in Madrid and their main goal was picking healthier products. However, not only there are still barriers to reading the information, but also the information most relevant to health is not always read or understood. Thus, interventions to increase nutritional labeling comprehension and use are required in order to facilitate the making of healthier choices by consumers.

Key words: nutritional labeling, survey, interest in food labeling, comprehension of food labeling

Introduction

Non-transmissible diseases related to diet, such as obesity, diabetes, cardiovascular diseases and cancer represent the number one worldwide cause of mortality and global burden of disease (1). The World Health Organization (WHO) adopted the “WHO Global Strategy on Diet, Physical Activity and Health” to tackle non-transmissible diseases through the promotion of physical activity and healthy diet. This strategy recognized the importance of nutritional labeling as a key informational tool needed to facilitate the selection of healthy foods by consumers (2).

Nutritional labeling was voluntary in the European Union until the publication of the regulation (EU) 1169/2011, which made it a compulsory part of product labeling. In 2002, available nutritional information in packaged products across European countries varied widely between 30% in Greece and 80% in the United Kingdom (3). Between 2002 and 2010, however, nutritional labeling has become commonplace in Europe reaching an average of 85% of all products. This is in part due to the labeling requirement in products with nutritional and health claims (4). Spain reached 95% adherence, thus becoming one of the top countries in terms of nutritional labeling (5).

Studies on consumers’ understanding and use of packaged product labeling show a high interest for nutritional information while at the same time revealing a wide range in comprehension levels. Unfortunately, it is not clear how this information influences either purchasing decisions at the point of sale or dietary patterns (6–8). However, some studies suggest that individuals who read nutritional labels are more likely to report a diet characterized by a high consumption of fruits and vegetables and a low consumption of fats and foods with high cholesterol content (7–11).

The few existing studies on this topic in Spain (12,13) are either based on small samples or are purely informational in nature, with poor reporting on methods and results (12). The Spanish agency for food safety and nutrition (AESAN for its Spanish acronym) published the 2011 report “Minimum indicator set for the evaluation and follow-up of NAOS (**N**utrition, **P**hysical **A**ctivity, and **O**besity Prevention **S**trategy)”. The set of indicators include two on nutritional labeling: 1. percentage of consumers reporting using nutritional information in the selection of products to purchase, and 2. percentage of consumers reporting using nutritional information to plan their daily menus (14).

The goals of this study are to describe three key factors surrounding nutritional labeling: 1. Madrid residents’ interest on food nutritional labeling; 2. Consumers’ comprehension level of such information; and 3. Consumer’s use of nutritional information to make purchasing decisions and plan their dietary menu.

Methods

Study Design

This is a cross-sectional study of a sample of adults residing in Madrid, Spain. Data were collected between March and May of 2012 in five supermarkets of the main chains in the city who agreed to participate in the study. The sites were located in the following neighborhoods: neighborhood of El Pilar (Alcampo supermarket), Almenara (Dia supermarket), Moncloa (Eroski supermarket), and Mirasierra (Gama and Maxcoop supermarkets).

Data collection

We designed a questionnaire based on instruments used in previous similar studies (15–17). It included multiple response items collecting sociodemographic data as well as data on the interest, comprehension, and use of nutritional labeling. The items covered areas related to both the nutritional traffic light criteria and to health and nutritional claims. A pilot study was carried out to test the comprehension level of the questionnaire and the feasibility of its completion at the point of sale. The pilot test, including 20 people in two supermarkets (Dia and Eroski), tested that the questionnaire could be filled out smoothly, in 5 to 7 minutes, while waiting in line at the register, or at fish or meat sections (and similar). Questionnaires were filled out by 4 previously trained interviewers who personally interviewed randomly chosen consumers already inside the supermarket. Interviews were carried out at different times and days of the week. The staff would stand near the areas mentioned above and choose consumers in inverse order they occupied in line. Before starting the interview, consumers were informed of the reason of the interview and were invited to participate. If they refused, then the next consumer in line was invited to participate. During the interview, the staff would read each question with the corresponding possible answers for the participant to choose one of the answers.

Data Analysis

Descriptive analyses estimated the proportion of interest, comprehension, and use of the nutritional labeling information. Among those who reported reading it occasionally, most of the times, or always, we calculated the frequency distribution of the reasons given for doing so. Similarly, among those reporting reading the labels occasionally or never, we examined the reasons for not doing so. We then performed analyses stratified by sociodemographic characteristics using chi-square (χ^2) to test proportions. Analyses were performed using the statistical package PASW Statistic 19 (SPSS Inc., Chicago, IL, USA).

Results

Our response rate was 80.6% (299 participants out of the 371 consumers invited to participate). Of these, 121 were men (40.5%) and 178 were women (59.5%) with a mean age of 45.7 years (SD=15.19, range=19-91 years of age). The majority of questionnaires were

filled out in two supermarkets, Alcampo (33.4%) and Eroski (29.8%). Most participants were citizens of Spain (84.8%), married or in a relationship (59.7%), living with 1 or 2 people (55.2%), with no dependent children under the age of 18 (69.2%), university-level educated (57.5%), and currently employed (64.4%) (Table 1).

More consumers reported reading nutritional labels occasionally (43.8%) than regularly (38.8%) before purchasing a product. Of those reading them regularly, women made up 44.9% vs. 29.8% of men ($p=0.03$). Labels were more likely to be read by young people (18-35 years of age), citizens of Spain, married, with children under 18 under their care, with secondary- or university-level education, and unemployed. However, these differences by sociodemographic characteristics were not statistically significant (Table 2).

Over half of participants (52.4%) reported full understanding of the nutritional labeling, with higher percentages found among those over 65 years of age (63.6%), citizens of Spain (53.8%), those living alone (62.1%), those with university-level education (61.8%), and retired participants (62.5%); though only these last two differences listed achieved statistical significance (Table 2).

A fifth of respondents (20.5%) reported using the label nutritional information regularly to plan their diet (16.2% of men and 23.3% of women). More participants (47.4%) reported never using this information to plan their diet, with higher proportions found among those over the age of 65 (60.6%), single (56.3%), with no formal education or primary-level education (62.1%), and students (77.8%); though no differences were statistically significant (Table 2).

Among consumers who reported reading nutritional labeling at least occasionally before making a purchase ($N=247$; 82.6%), 77.7% ($N=192$) answered our questions regarding their reasons for doing so. The most common one was to select healthier products (81.3%), 9.4% reported allergies or intolerance to certain foods, and 9.4% reported other health issues (Table 3).

The majority (78.6%) of consumers reporting checking labels occasionally or never provided information regarding why they do not read nutritional labels. The most common reason was lack of time (38.9%) followed by lack of interest (27.1%), reading difficulties (18.1%), and comprehension difficulties (8.3%) (Table 4).

From the data found in nutritional labels, what interested to a greatest number of people was the information about additives (54.8%), fats (49.5%), and saturated fats (41.5%). The information of least interest was that on vitamins and proteins (15.1% and 14.7%, respectively). Information on additives (preservatives and colorants) were more likely to be of interest to consumers between 36 and 50 years of age (69.4%; $p=0.01$), with young children under their care (66.3%; $p<0.01$), and individuals with university-level studies (62.2%; $p=0.01$). The groups most interested in saturated fat information were Spanish citizens (45.65; $p<0.01$) and those with university-level studies (54.1%; $p<0.01$). Caloric information was of greater interest among women and those under the age of 35 (42.7%

and 47.4%, respectively, vs. 36.5% on average). These differences by age and sex were statistically significant. However, interest in sugars, salt content, fiber, proteins, and vitamins did not vary by sociodemographic variables enough to reach statistical significance (Table 5).

Discussion

Over two thirds of consumers residing in Madrid read nutritional labels, occasionally or regularly, before a purchase. However, almost half of the consumers reported that they did not fully understand the nutritional information nor did they use it to plan their diet. The reasons reported most frequently for reading and not reading nutritional labels were: choosing healthier products (81.3%) and the lack of time (38.9%), respectively. Information on additives and fats drew the most interest among consumers (54.8% and 49.5%, respectively)

In our sample, people who lived with a partner or with children, those with higher educational levels, and young women showed the greatest interest for labels, which supports previous findings (8,16–20). The high proportion of people reading nutritional labeling found in this study is consistent with that found in other Spanish and international studies (12,13,16,18,21–25) with the exception of a United Kingdom study, very similar to this one, where the percentage of consumers that regularly read nutritional labeling was substantially higher (24). Despite the interest expressed for nutritional labeling, some studies using more objective measures suggest that the actual role of labels in the purchasing process is much less significant, probably because consumers read the labels without fully understanding the information provided (26).

Our data confirm this hypothesis, as close to half of the consumers failed to fully comprehend the information on the label or did not understand it at all. These results are similar to those from a recent study carried out in the Madrid region and other 8 Spanish regions (12).

Studies in Brazil and New Zealand observed comprehension levels lower than in our study (17,22), which may be explained by our sample's higher educational level. The finding that retired people reported a higher level of understanding of the labels than the rest of the consumers may be explained by their greater interest in health issues (27). It could also be due to a biased perception of the comprehension level of the label, since studies with objective measures of comprehension levels carried out in England and France conclude that the oldest age groups fare worse than the rest of the samples (6). In fact, the ability to interpret labels and improve comprehension and use of nutritional information is highly associated to previous knowledge on the topic (28,29), which is probably worse among the retired than younger Madrid residents, since their average educational level is substantially lower than the level of younger age groups (30).

Some studies find that women are more likely to report that nutritional labeling influences their food purchasing decisions (10,25) and that they trust labels (31). In our study, where the reported comprehension level of label information was similar across genders, women were consistently more likely to report reading the nutritional information and using it to

plan their dietary menu than men. This may be due, in part, to the fact that in Spain women have traditionally been more involved in grocery shopping and food preparation than men (32).

Over two thirds of consumers reported reading nutritional labels in order to choose healthier products, which supports previous studies (16,21). Others provided reasons such as allergies, intolerance to certain foods, or other health issues such as obesity or hypertension, a reason reported by other authors (17,23). Other studies suggest that people with chronic diseases are more likely to read nutritional labeling and are more aware of nutritional recommendations than those without chronic diseases (33). Similarly to other studies (17,18,21,25), the most frequent reasons given by consumers for not reading the labels are lack of time, lack of interest, and the reading and comprehending difficulties. These results point to the need of adopting better nutritional labeling practices in order to improve its clarity, legibility, and interpretation (9). A recent review of the literature shows that the multiple nutritional traffic light criteria is the front-of-pack labeling method that helps consumers choose healthier products most consistently (34), making it an effective alternative already widely used in the United Kingdom (35). Nevertheless, respondents with lower educational levels or nutritional knowledge prefer simple formats, such as the simple nutritional traffic light system, the “green tick,” or color coding (36). In addition, some empirical research suggest that consumers’ use of labels improves dietary choices or reduces the consumption of less-than-healthy food products (37). Still, the potential for nutritional labeling to improve dietary habits at the population level is not clear and there are only a handful of intervention studies showing long-term effects in diet behaviors after exposure to nutritional information (38).

Studies on nutritional labeling do not usually collect information regarding consumers’ interest on food additives, since additives are not nutritional components. When these data are collected, results show that interest levels are lower than the ones reported here (24). In contrast, consistent with our data, most studies conclude that information on fats and calories is what interests the consumers the most (16,17,21,24,39), with caloric information being of most interest to women (8,16). This high interest on fats and calories stands out against the low interest level on sugar, salt, and fiber content. The effect of fat on health depends on the type of fat and there is recent evidence that raises doubts about the magnitude of the potential effect of saturated fats on cardiovascular health (40). However, labels do not provide information on the amount of trans-fatty acids which have been associated with higher cardiovascular risk. Similarly, excessive sugar consumption is associated with higher obesity risk, type 2 diabetes, and cardiovascular disease (41,42) and high salt consumption may increase the onset of hypertension (43). In contrast, fiber consumption may contribute to lower risks for obesity, type 2 diabetes, dyslipidemia, hypertension, coronary disease, and colorectal cancer (42). Thus, it is necessary to provide detailed information about the type of fats in labels (i.e., amount of trans-fatty acids) and establish educational campaigns about the association between different nutrients and health.

Our results should be interpreted in the context of the study's limitations. First, the study is based on self-reported data. However, the main limitation is the questionable representativeness of our sample whose average educational level is substantially higher than that of the population of Madrid (30). This is due, on one hand, to the inclusion of upper-middle class neighborhoods in the study design and, on the other hand, to the different grocery shopping habits of different socioeconomic populations. We sampled in large supermarkets but not in small neighborhood grocers (44). In addition, it is possible that consumers who agreed to participate were more sensitized to the topic of nutrition than those who refused our invitation. Thus, we may have overestimated rates of reading, comprehension, and use of nutritional labels (18,26). Nevertheless, strengths of this study include aiming for the highest possible representativeness by including main supermarket chains in Madrid and selecting potential participants randomly within each of those venues. Further, the high response rate and the fact that many of our results are consistent with most of the studies found on the topic suggest that any non-response bias is likely to be non-differential.

This study based on a sample of adults residing in Madrid, Spain, recruited while grocery shopping suggests a high level of consumer interest on nutritional labeling which, unfortunately, fails to correspond to the level of subjective comprehension of the information contained in the labels and the use of such information on dietary planning. The adoption of simple labeling systems such as the nutritional front-of pack traffic light scheme may facilitate checking nutritional information for people in a hurry or with reading limitations. This, in turn, would improve comprehension and the use of the information by the segments of the population with lower levels of nutritional knowledge.

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