ORIGINAL ARTICLE

FOOD LABELLING FROM CONSUMERS' PERSPECTIVES: A REVIEW

Kasturi Perumal[1]; Balamuralithara Balakrishnan[2*]; Muhammad Zaffwan bin Idris [3]

[1] Faculty of Art, Computing and Creative Industry, University Pendidikan Sultan Idris, Malaysia. Email: kasturi@tarc.edu.my
[2] Faculty of Art, Computing and Creative Industry, University Pendidikan Sultan Idris, Malaysia. Email: balab@fskik.upsi.edu
[3] Faculty of Art, Computing and Creative Industry, University Pendidikan Sultan Idris, Malaysia. Email: zaffwan@fskik.upsi.edu.my

*Corresponding author

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Abstract

Food labelling is critical in disseminating information of food products between the customers and the food producers. Information about the ingredients on food labels helps consumers to understand better and make healthier food choices. As food labelling is crucial, businesses must understand how to design food labels that influence the consumers' choices. As such, it is imperative to understand the consumers' perspectives on food labelling. This review aims to highlight the consumers' perspectives on the information on food labels. Electronic searches in Google Scholar, Web of Science, PubMed/Medline, and Cochrane databases were undertaken to find peer-reviewed literature on food labelling and related articles. The findings can contribute to developing new designs in food labels that effectively portray and provide adequate nutritional information to consumers

Keywords: Food labelling; Nutrient; Ingredients

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Introduction

The hectic lifestyles and high economic development have made people desire convenience food, particularly during mealtimes, which has created a high demand for ready-to-eat foods with a longer shelf life and less preparation (Wegman et al. 2018)[1]. In response to this demand, supermarket shelves are increasingly stocked with processed and ultra-processed foods, although consuming them has increased obesity and chronic non-communicable diseases (Wegman et al. 2018)[1]. The situation has led to a critical need for consumers to access nutritional information of these food products to exercise their freedom of choice, which is protected by several countries and international organisations (Karakaya, 2018)[2]. Thus, food labelling is important, as it serves as the primary means of communication and information between the producer and the consumer regarding the nutritional qualities and components of the food (Annunziata, Mariani, & Vecchio, 2019)[3].

Food labelling is vital for consumers as it assists them in decision-making when shopping for food (Annunziata, Mariani, & Vecchio, 2019)[3]. Three studies suggested that the information supplied on food labels can affect consumer decisions (Arrúa et al., 2017; Chan et al., 2017; Grunert et al., 2018)[4,5,6]. Besides that, this information can help consumers make better-informed choices and contribute to preventing illness and well-being (Liu & Niyongira, 2017; Pabst et al., 2019)[7,8]. According to Bazzani, C (2019)[9], consumers are prone to read the information on labels to determine whether products meet their preferences and follow their needs for specific nutritional programs (e.g., vegetarians) or health conditions (e.g., diabetes). Thus, Karakaya (2018)[2] a detailed labelling research to inform consumers of food products' specific nature and qualities, allowing them to make a more informed choice.

Although food labelling has a vital role in consumer decision-making, only a few studies have been conducted on consumers' attitudes and perceptions of the mandatory information on food packaging (Khanpur et al., 2019)[10]. A prior study indicated that people value clear and legible information on food labels (Annunziata, Mariani, & Vecchio, 2019)[3]. However, little research has been conducted to ascertain how consumers perceive that information (Pomeranz et al., 2019)[11]. However, the Malaysian Food Safety Agency (2010) highlighted the food industry's efforts to increase consumer information and adapt to changes in food labelling mandated by law. Additional studies on consumers' accurate perceptions of clarity and comprehension of information are still necessary (Pomeranz et al., 2019)[11]. Questions also arise on what consumers require from food labelling, as the label provides information on the nutritional qualities, including their ingredients, the energy content, and significant nutrients.

Apart from that, Thiene et al. (2018)[12] emphasised that food labelling communicates information to consumers to satisfy their demands. As labels serve as the primary point of contact between consumers and food firms in the absence of a face-to-face meeting (Van der Bend, D. L 2019; Krešić et al., 2019)[13,14], and this situation has led to the need to create labels that are sufficiently informative but not deceptive (Thiene et al., 2018)[12]. The fundamental guidelines on sufficient information and misleading food labels have yet to reach a satisfactory level, thus creating doubts about what is food labelling from consumers' viewpoints.

Moreover, studies by Thiene et al. (2018)[12] have been conducted to examine food label theories and design. However, according to these studies, a majority of them examine the issues from the consumer's perspective. In contrast, others focus on nutrition and health, daily foodstuffs

and meal effects on health, the food industry and related products, market and societal implications, and child nutrition. Additionally, an interesting section of the literature has examined the use of eye-tracking tools to ascertain the consumer's responses to various food label designs (Tierney et al., 2017; Bazzani, C, 2019; Shangguan et al.,2019)[15,9,16]. However, the researchers acknowledged that very few labelling design studies had been conducted, thus, making it imperative to explore food labelling from the consumers' perspective.

Furthermore, consumer awareness and comprehension of food labelling are critical, as they are critical components in ensuring food safety. A study conducted by (Tanemura & Hamadate, 2022)[17] to assess consumer awareness of food labelling in Ghana found the participants were reasonably knowledgeable and understood the value of food labelling information. In comparison, a study done by Liu and Niyongira, (2017)[7] revealed that 70% of the respondents claimed they had never used nutrition labels while shopping for groceries (Liu & Niyongira, 2017)[7]. Nonetheless, there is no precise data on public understanding of food labelling, while reports indicate that consumers' views of the nutritional contents of foods are increasing. This article assesses consumers' awareness and reliance on food label information.

Hence, electronic searches in Google Scholar, Web of Science, PubMed/Medline, and Cochrane databases were undertaken to find peer-reviewed literature on food labelling and other relevant articles. The study's findings are hoped to develop new designs that emphasise effective communication, better design choices, and the application of design components in communicating nutritional information in food labels.

Food labelling

Food labelling is defined by the World Health Organization (WHO) as any written, printed, or graphic display on food packaging intended to sell or promote the foodstuff (Miller et al., 2017)[18]. The primary concern of food industries is the health of consumers. The information contained on food labels enables consumers to make informed purchasing decisions. Food labels should include information on the composition, ingredients, quality, origin, processing, and preservation of the products (Anastasiou, et al., 2019; Cavaliere et al., 2017)[19, 20]. Food producers need to provide customers with simple, clear, and consistent product labels and health benefits that can equip them with fundamental nutrition knowledge to make purchasing decisions (Chen et al., 2017; Kanter et al., 2018)[5,21]. These food producers are responsible for designing labels that indicate the content and quality of salt, sugar, energy, vitamins, cholesterol and trans-fat to customers. Besides that, food labelling should benefit all customers, notably the illiterate groups and those with colour and vision deficiencies, as it has the potential to reduce obesity and chronic diseases associated with poor eating habits. However, food labelling involves technical and perplexing problems that can contribute to many consumers failing to understand the printed information (Shangguan et al.,2019)[16].

It is worth noting that Europe, North America, Australia, New Zealand, and Latin America all have reliable food labelling laws (Van der Bend, D. L, 2019; Machin et al., 2018)[13,22]. In 2014, the U.S. Food and Drug Administration recommended various modifications to the 1992 nutrition data labelling requirements (Tanemura & Hamadate,2022)[17]. The law enhanced the legibility of information by establishing a minimum font size for mandatory information, uniform and specific allergen information, and information on the origin of fresh meat from pigs, sheep, goats, and

poultry. To ensure consumer protection, the act regulates foodstuffs' labelling, presentation, advertising, and nutrition labelling. The primary goals of food legislation are to emphasise food safety and safeguard the consumer's health. Consumers can decide when purchasing foodstuffs if they have access to ingredient lists, nutrition information, and allergies and nutrition information. Apart from container design, colour, font size, and layout entice buyers to read and comprehend the food label (Tanemura & Hamadate,2022)[17]. Thus, it is critical to have dependable and simple-to-understand food labelling to correct poor diet habits. Moreover, Tanemura and Hamdate (2022)[17] highlighted that developing a standard clinical evaluation may be essential to benefit food labelling communication effectively.

Methodology

The current review analysed articles on consumer perspectives concerning food labels on pre-packaged foods published in English-language journals or research reports. This review includes studies examining food labels, the usage of nutrition labels, ingredients labels, consumer knowledge, and consumer comprehension of food labels. The review of these articles will be concentrated exclusively on food labelling at the point of purchase. We studied 58 peer-reviewed pieces of literature on food labelling and included papers discovered through electronic searches of the Google Scholar, ScienceDirect, PubMed/Medline, and Cochrane databases.

Results

Nutrition labels and ingredient lists are the two primary sources of health information on foods for most consumers. Consumers look for health information about a food product based on the nutrient content printed on the package, like the specific substances, price, calories, sugar, fat, sodium, freshness, and nature of the label, whether inorganic or organic. Additionally, consumers should consider the brand or business name, nutrition content icons on the front of the packaging, the company's website, and the corporate social responsibility statement. When determining healthy food, highly educated customers with high incomes pay more attention to brands or corporate names than customers with lower education and less income.

Nutritional Labels

Nutritional labels should be placed on all packaged foods and drinks as required by the Food and Drug Administration (FDA). Nutritional information on food labels includes serving size, calories, vitamins, fats, carbohydrates, and calcium content. Some customers read nutritional labels to ascertain cholesterol content, while people with diabetes check the sugar content. The nutritional information on food packages is intended to aid customers in selecting swiftly healthy foods to consume and allow them (Cavaliere et al., 2017)[23] to make more informed diet-related choices while shopping. As a result, the nutritional information on the front of the package should provide a detailed description of the product. Consumers have increased their attention to nutritional issues in recent years, resulting from various lifestyle changes, including eating habits, ageing, and safety. Several factors such as population growth, age, modern society, and household size may impact purchasing decisions.

Most people read nutritional labels only when purchasing a particular food product Bazzani, C (2019)[9]. However, nutritional labels are often difficult to decipher and frequently misread. It is critical to understand how to read a nutritional label, especially for those who suffer from chronic diseases and requires a particular diet. Nutritional labels aid in the planning of a balanced and nutritious diet. As a result, the FDA amended the existing regulations in 2021 to assist customers in making better-informed decisions. The amendments included increasing the visibility of the calories and serving size by utilising larger fonts and adding more information on the entire package regarding vitamin D and potassium, serving size, calories and nutrients for a single serving. To acquire or maintain a healthy weight, an individual must consume the required amount of calories. Calorie requirements vary according to an individual's age, gender, height, weight, and level of physical activity. For example, 100 calories per saving are considered a reasonable quantity. However, 400 calories for a single meal item is considered excessive. Additionally, serving size is critical when comparing the calories and nutrients in various foods to make the best option. The total sugar added during food processing, such as table sugar, syrups, honey, and fructose, is also included on the amended nutritional label, which is crucial to educate consumers about their daily sugar consumption.

Recently, numerous studies have been undertaken to ascertain customers' involvement and their perceptions of nutrients on food labels. Karakaya, (2018)[2] conducted a study to determine customers' engagement with nutritional labels in the United States of America. A random sample of 200 people who read food labels and 100 people who did not read food labels was chosen for this study. The internet survey included questions concerning the usage of food labels and the importance of portion size. Consumers under the age of 25 and those over the age of 70 had the lowest level of nutritional literacy, whereas more educated consumers appeared to read more nutrition labels than others.

Additionally, the study discovered that 50% of respondents believed that the serving size information on food packages was misleading. Customers were most concerned with sugar and sodium content, followed by fat, cholesterol, protein, calories, and carbohydrate information. Additionally, the research revealed that customers who read nutritional labels were concerned about the correct consumption of nutrients and the danger connected with the portion of food size offered. In general, it may be assumed that consumers struggle to comprehend the details concerning serving size, which affects their selection and comparison of the amount of nutrition in various foods.

Additionally, the study conducted by Chan et al. (2017)[5] demonstrates that there was no standardised nutritional label capable of guiding misleading consumers. This study aimed to discover whether foods with smaller serving sizes had a higher calorie density than those with bigger serving sizes. As a result of Canada's deregulated serving sizes, food manufacturers have begun to provide smaller portion sizes for higher-calorie meals, which can be misleading to customers. Wegman et al. (2018)[1] investigated how adults used nutritional labels while making purchasing decisions for household foods. They reported that understanding nutrients were critical for keeping a healthy body weight. In this study, 390 adults with one or more children participated while purchasing food to understand their sociodemographic factors and beliefs. They discovered that 53% of participants regularly read food labels when making food purchase decisions. Female participants with a higher level of education were more likely to read the nutritional labels than males.

Ingredients Listings

The ingredients on food labels are mandatory in many countries, besides the nutrition label (Arrúa et al.,2017)[4]. The food manufacturers need to list all the ingredients used on the food label. These ingredients should be organised in order of predominance, where the large quantities should precede the ingredients used in the smaller quantity. The label must also list any FDA-certified colour additives. However, it also can be listed collectively as "flavours," "spices," "artificial flavouring," or "artificial colours", without naming each one individually. Besides, a declaration of allergens should be included in the ingredients list. The terms commonly used in listing ingredients and the labelling of nutrients differed from market to market. This meant that the list of ingredients on the same type of bread would be different for different brands. Reading the list of ingredients before buying any food is essential.

While many studies have investigated consumers' awareness of nutritional labelling, only a few studies have been conducted on ingredients listed as food. Grunert et al. (2018)[6] studied how consumers wanted the use of alcoholic ingredients listed as nutritional information. Additionally, this selection affected the product involved, health interests and prior knowledge of the ingredients and nutritional characteristics of alcoholic beverages. The results showed that the use of information on food labels was mainly affected by the interests of the consumers and, to a lesser extent; health reasons.

A qualitative study was conducted by Pabst et al., (2019)[8] to understand the responses of wine consumers on the ingredients and the nutritional labelling. They researched how the information on nutritional labels influenced their perception of wine as a natural product and whether it affected wine consumption. The study showed that many consumers overestimated the calories in the wine, so nutritional information was not considered valuable, and consumers felt confused about the information about the ingredients when they read it for the first time.

Front-Of-Package Labels

Front-of-package (FOP) images, symbols, and logos are displayed on the rear or side of the packaging to assist consumers in selecting, purchasing, and consuming healthy products. The FOP label is a condensed representation of the content of nutrients of a packaged food (Khandpur et al., 2019)[10]. Given that the abundance of information on food packaging can obstruct consumers' decision-making, the FOP enables consumers to quickly interpret and identify unhealthy foods (Pomeranz et al., 2019)[11.]

The Canadian government is committed to implementing the FOP systems to educate consumers and promote pre-packaged food reformulation (Mulder et al., 2018)[24]. The new Chilean warning system employs symbols such as triangles, circles, and a magnifying glass to indicate high saturated fat, sodium, and sugar levels. Additionally, manufacturers worldwide employ a traffic light system that contains information on the calories, saturated fat, carbohydrates, and sodium per serving (Karakaya, 2018)[2]. The primary objective of FOPS is to compel food manufacturers to reformulate constantly and introduce healthier foods (Kanter et al., 2018)[21]. To assist consumers in making healthy choices and to make FOP labelling more understandable, many systems have been created globally (Anastasiou, et al., 2019; Cavaliere et al., 2017)[19,23]. According to Muzzioli, L. (2022) [24], when FOP labels contain a defined health objective, they substantially impact consumers' food choices. They also studied whether people motivated by health are more

concerned with nutritional information than people motivated by the flavour of foods. The results indicated that participants with health priorities perceived nutritional information as more important than participants who desire taste. Two factors that influenced the FOP of individuals were recognised as motivation and product design.

Besides, Miller et al. (2017)[18] examined the effects of packaged food on two forms of FOP nutritional labelling with a specified health objective. A modified version of the traffic light system was compared with the Chilean warning system (Miller et al., 2017)[18]. The findings revealed that providing consumers with information about FOP nutrition could help them make better meal choices. (Karakaya, 2018)[2] found that the traffic light system outperformed the Daily Amounts Guidelines (DAG) in terms of goal-directed eating behaviours and accurate identification of unhealthy foods. Food products labelled with warnings of excessive saturated fat, sugar, and sodium were considered less healthy. The study's findings indicated that both warnings and the traffic-light system could identify the healthiest food products.

Additionally, Annunziata, Mariani, & Vecchio (2019)[3] showed that consumers paid more attention to the Front-of-Pack (FOP) nutritional labels than to the Nutrition Facts Panel (NFP). The location of the front pack and the design elements were the two primary reasons consumers frequently examined. The use of accurate colours drew the consumer's attention more, and there was no evidence of the influence of information coding (Annunziata, Mariani, & Vecchio, 2019)[3.]

In summary, front of pack labels with simplified information has garnered more attention and are more visible than traditional labelling. However, research on the effectiveness of this FOP scheme is still scarce, and additional research is needed to determine its effectiveness in educating consumers to choose healthy foods.

Conclusion

In conclusion, this analysis demonstrated that food labelling, particularly nutrient and ingredient labelling, had a beneficial effect on the purchasing behaviour of consumers that promoted healthy food consumption. Nevertheless, no large-scale study has been undertaken to determine the influence of food labelling on purchasing and consumer behaviour. A study based on a theoretical model of the influence of food labels is necessary, as most research focuses exclusively on applied research. This study has examined a more comprehensive range of consumer perspectives and provided their preferences based on a meta-analysis. Additionally, policymakers should continue to adopt obligatory labelling and analyse existing information. This is because, while food labels do not significantly improve eating habits, mandatory labelling may encourage food manufacturers to enhance the nutritional content of their products. Further research is needed to determine the effects of knowledge on serving size and ingredients lists, as these areas are highly under-researched. Additionally, further research on the effects of health-related statements on eating habits should be performed to determine whether they benefit or harm health.

More effort should be made to conduct studies on those who suffer from chronic diseases and low levels of dietary literacy. There should be continuous research to persuade consumers to use the nutrition labels and discover interventions that could promote their use and comprehension. In conclusion, modifications to food labelling may be necessary for assisting consumers in creating a more suitable point-of-purchase situation.

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