



A Review of Research Studies on Factors Affecting Consumers' use of Nutritional Labels



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Abstract

Objective: This paper aims to summarise and draw roles of various demographical and situational factors affecting usage of nutrition label in consumer purchase decision. In addition, it also rationalises various types of label formats that could influence use of nutritional label.

Design: A systematic review was conducted by searching databases online. To identify the articles online, researchers have searched journal articles and conference proceedings. Total 60 articles were extracted out of which 50 were selected based on the topic specification.

Results: Nutrition label is one of the most important sources of nutrition information about product. Nutrition labels are considered as one of the trustworthy source of information as it is given by manufacturer and approve by government agencies. Demographic factors like education and income have positive relation with usage of nutrition label. Females and married consumers are more likely to use nutrition label as compared to respective counterpart. Age, frequency of purchasing a product, time availability and household size are negatively related to the usage of nutrition label. One of the most effective ways of simplifying the nutrition label is to introduce a simple, easy to understand and unified labelling system.

Conclusion: The demographic factors affect the usage of nutrition label, it's the responsibility of food producer to elicit label according to the requirement of potential customers. The chances of usage of nutrition label can increase if the labelling designs by considering demographic and situational factors of target market.

Keyword: Nutritional; Labels; Health risks; Ingredients; Net quantity; Shelf life; Grade/quality; Manufacturer; Dealer; Importer; Food standards

Introduction

The diet-related health issues have been increased intensely from last few years across the globe. Now, it's really important to take corrective steps in this field considering the fact that the people suffer a lot from the health risks like blood pressure, cardio disease, and high body mass index. In response to this serious issue of health risk, the governments of various countries has raise the concern about different issues like eating habit of people, physical activity, and attitude towards healthy living. In this situation, self-discipline on the consumption of food is really very important. The nutrition and calories requirement varies from person to person based on their physic. It became really important that the consumer must have knowledge of the product they are consuming.

The best way to inform the consumer about the product and the nutrients it carries is to provide information about the product. Food label on the product plays the role of informing the consumer about the product, its ingredients and nutrients it contains. A label serves the following three primary functions:

(i) It provides basic product information (including common name, list of ingredients, net quantity, shelf life,

grade/quality, vegetarian society logo, country of origin, name and address of manufacturer, dealer or importer and food standards agency.

(ii) It provides health, safety, nutrition information which includes instructions for safe storage, handling, nutrition information such as quantity of fats, protein, carbohydrate, vitamins & minerals and preservatives, colors, if used any, quantity per serving of stated size of food (in the nutrition facts table) and specific information on products for special dietary use.

(iii) It also acts as a vehicle for food marketing promotion and advertising promotional information and claims such as 'low fat', 'cholesterol free', 'high source of fiber', 'natural', 'organic', 'no preservatives added' and the like. Labels help people sometimes in some cases if they have the knowledge or motivation to use the information, which may or may not be in a format they can understand. Food labeling is found to be a very vital public health tool aimed at providing consumers with information which may influence their purchasing decisions. According to the FDA in the USA, a

label is the primary point of contact between the producer and the purchaser and should be thought of as an integral part of the producer's marketing plan. According to the FDA (1998), a label should clearly and minimally state the name of the product, the net weight, the nutrition facts panel (nutrition label), the name and address of the manufacturer, and the brand name. According to the Federal Food, Drug, and Cosmetic Act, the labeling is "a written, printed, or graphic matter:

- i. Upon any article or any of its containers or wrappers or
- ii. Accompanying such article at any time while a device is held for sale after shipment or delivery for shipment in interstate commerce". The food labels act as a signaling mechanism by which food companies assure their potential consumers regarding their sound quality control practices.

One of the most important components of a food label is nutrition label which is available on the packed food product. Nutrition label alone is likely to offer limited success to public health communication method but it can make a small but important contribution towards making informed food choices. Consumers can use health claims, which appear on the food packages to identify foods with certain nutrition qualities related to risk factors and wellness. Consumers' ability to choose their diets somewhat depends on the quantity and quality of information available through a variety of sources, including nutrition panel food labels [1].

According to the FDA (1998), nutrition information on food items help consumers to eat a variety of foods, maintain a healthy weight, choose a diet with low saturated fat and cholesterol, choose a diet with plenty of vegetables, fruits, and grain products, and use sugars, salt and sodium only in moderation. Nutrition label act as a platform to convey food-related information based on which consumers can make dietary intake-related decisions [2]. It allows consumers to compare the nutrition values of similar food products and to make healthy food choices based on the relevant nutrition information.

Nutrition label plays an important role in providing the appropriate information to consumers. The inclusion of a nutrition label on food items may be an important packaging decision. Nutrition labels can simplify the whole concept of healthy eating. It also allows consumers to make an informed judgment of a product's overall value. The food labels are there to inform the nutritional composition of product [3]. The objective of nutrition food labeling is to provide consistent, understandable, and usable labels that can help consumers to make informed and healthier food choices [4]. Nutrition labelling is found to affect the consumer purchase behaviour significantly. Some evidence reveals that provision of nutrition information may allow consumers to switch consumption

away from 'unhealthy' products in those food categories toward 'healthy' products in food categories more easily [5].

That's how nutrition label helps the consumer, manufacturer and government. With the help of nutrition label consumer can choose healthy food and can easily maintain a healthy diet. With the help of it, the manufacturer can differentiate their product easily and it becomes easy for them to win the trust of the consumer by providing the right information. It gives the opportunity to the food manufacturer to lead in this field as they can influence the consumer attitude and perception which ultimately change the purchasing behavior with the help of the better information in a simple format [6].

The government can have control over the quality of food, with the help of nutrition label and can also save certain cost which is incurred by non-communal disease most probably generated by an unhealthy diet, which is again caused by unhealthy food choice. Mandatory nutrition label information is to allow consumers to make healthy dietary decisions [7]. The government should encourage the people to take care of their own health and also help them to improve their attitude towards nutrition label by emphasizing health promotion and advocating the use of nutrition label, to have control on spending on a various decision related to diet [2]. The policy maker should emphasize on providing easy to read, simple to understand information that makes customer reliable on information [6]. Majority of the consumers are able to retrieve the simple information and make an easy comparison between products by using the numerical information. As the majority of people found it very difficult to understand the nutrition information, there is a need of taking educational activities to make labelling simple [8]. According to Priyadarshini V [9] the marketers and Government should encourage consumers to use nutrition label by

- 1) Developing a policy to impart nutrition education at school level,
- 2) Spreading awareness among consumer about the relation between diet and its impact on health,
- 3) Making nutrition label easy readable and understandable, and
- 4) Delivering the right content in the product.

Materials and Methods

The research is limited to the paper published from January 2000 to October 2017. The majority of research was from US, UK, New Zealand, Australia, India, Pakistan and Sri Lanka. The databases used to search papers were Emerald Insight, PubMed, Springer Open, Proquest and Science Direct. It was restricted to English language and pre-review studies examine effects of various factors in the usage of food label. To identify the articles online, we have searched journal articles and conference proceedings. The search for paper was conducted

in the month of November 2017. The combination of the words used for search was “nutrition label” AND “consumer” OR “food label” OR “ingredient list” OR “consumer health consciousness” OR “health claim” OR “nutrition claim” OR “packaging policies”. Total 60 articles extracted out of which 50 were selected based on the topic specification.

Factors affecting usage of nutrition label

There are many researches conducted in various countries to find out the relationship between demographical and situational factors of consumer and their understanding & usage of the nutrition label. Demographical and situational factors like age, gender, education, income, marital status, dietary status and number of members in a family, BMI of consumer, area of residence, and health consciousness are few on which various studies have been carried out.

Education

There is a significant association between usage of nutrition label and the education level of the consumers [10]. According to Priyadarshini [9] the awareness and usage of pre-packaged food label were found to be significantly associated with the education level. Level of education is one of the important factors affecting knowledge and understanding nutrition label. The chances are higher than the consumers having more year of education has greater nutrition knowledge [11]. It also plays an important role in one's concern about health. The well-educated consumers may possess good knowledge and understanding of information related to health [12]. Consumers who have completed high school were more concerned about us of nutrition label [13]. Consumers with higher education found labels easier to read as compared to those who were not so highly educated [14]. The consumer having bachelor and postgraduate degree were more aware towards food labels [15]. The food planner's educational status positively affects the willingness to read food labels [16]. It may be possible that the consumer with low education may face some difficulties in understanding the nutrition label or its various technical components. According to Carrillo E et al. [17] consumers with less education found the nutritional label technical and difficult to understand.

There are few research having contrast results i.e. there is a negative relationship between education level and usage of the nutrition label. The level of education of family members does not create awareness of observing nutritional labels [18]. There is no relationship between the level of education and using nutrition label [19]. Consumers with higher education and perceived time pressure with greater importance to the sensory aspects of the food products are less likely to read a food label [6].

As from the review of literature, we can conclude that the relationship between education and usage of nutrition label is confusing. There may be other factors like attitude of

consumers towards health and consumption of healthy food. The usage of nutrition label might be something which is not dependent on the education level of consumers.

Age

Age is one of the variables which significantly affect the use of nutrition label. Nutrition knowledge differs according to age [20]. There is a significant association between age and usage of nutrition label [1]. Age of the consumer is one of the variables influenced the probability of reading nutrition labels [21]. The awareness and usage of pre-packaged food labeling are significantly associated with the age of respondents [9]. The age and usage of nutrition label were negatively related [13]. Chances of being more knowledgeable and locating information on the food product are higher in the case of younger respondents than the older one [22]. There are fewer chances of reading nutrition label in the case of older age group [12]. The research is at its infancy level where it different findings. Both age group people, young and old gave similar attention to the nutrition label [23]. As the age increases, there are higher chances of using nutrition label for fat content [24] and for cholesterol content [25]. The elderly people were more interested to eat healthy, but they have less nutrition knowledge [26]. Old age respondents were concerned about fat, sugar or salt intake when checking the nutrition facts [8].

There are very few researches that found that the old age consumers are using nutrition label. The majority of research found that the young age group are using nutrition label. Research also revealed that the old age consumers wish to use nutrition label but because of reasons like; small font size, complex terminologies and inability to analyse and understand the label value is difficult.

Gender

Most of the study found that gender plays an important role in purchasing decision. Nutrition knowledge differs according to gender [20]. Females are more interested in eating healthy food than men [26]. The percentage of women checking labels is a greater than a man because they are more health conscious [19]. Females are more aware of the nutrition label than the male consumer [9]. Females are more willing to read food label [11,12,21,27]. There are higher chances that the females purchase labeled products [28,29]. The women are reading nutrition labels and it also affects their purchasing decisions [30]. Females as a family's food gatekeeper and they have a large share of the responsibility for their family's health that's why they are willing to pay more for nutrition information [31]. Females pay more attention to the nutrition label for the information like calories, vitamins and minerals [25]. Women are also concerned about fat, sugar and salt intake while checking the nutrition label [8]. Females with special diet are also interested to read labels [32]. According to Aygen [13], there is no significant impact of gender in the case of using nutrition labels.

It's clear from the literature review that nutrition label users are more female as compared to the counterpart. There are few researches that found the reasons for such outcomes like females are more health conscious and female are responsible for the food consumption of household.

Marital Status

Marital status is again an important variable creating an impact on consumer purchase decision. There is a significant impact of marital status on the use of nutrition label [12]. There may be variations in consideration of factors while purchasing food product before and after marriage. The married people are more conscious in nutrition label checking than singles [33,19]. The married consumers are more likely to refer the nutrition label [34]. There is research carried out with the opposite result, where there is no relationship between marital statuses on the usage of the nutrition label. Marital status of respondent does not to have an effect on usage of nutrition labels [12].

Income

Income of a consumer shows an impact on their purchase decision as more income gives them freedom for comparing more products with various quality factors. There is a significant association between income level of consumer and usage of nutrition [35,10]. Individuals with higher earning are more likely to use nutrition label as compared to its counter side [12]. The meal planners with higher household income are more likely to use nutrition label as compared to the meal planner with lower household income [21]. On the other side, there are contrasting findings that reveals income level did not play a role in the usage of nutritional labels by the consumers [14,31]. Consumer living in the high-income area seems to use less of the nutrition label, the reason might be because of the long working hour, they may spend less time for shopping and may not much concerned about the nutrition label [13].

Household Size

The type of household plays an important role in the usage of the nutrition label and purchasing decision. There is a significant relationship between household size and the usage of the nutrition label. The family structure creates an effect on the nutritional status of adults [12]. The household size negatively influence usage of nutrition information [25,31]. Increase in the member of the household or the number of school going children decrease the chances of reading food labels. [16]. The consumers from larger families are less likely to use health claims [6]. On the other side, there are few researches having contrast results. The size of the household did not play any role in the usage of nutritional labels by the consumers [14].

Children in family

Children in family show an impact on the purchase decision. Family normally take care of food when there are children in

the family. But no research found such relation; a number of children in the family did not affect the usage of the nutritional label [14]. The family with or without preschool children, it doesn't create awareness of using nutrition label [18]. Presence of children in the family doesn't affect the usage of nutrition label [13]. There is a lower probability of purchasing nutrition labeled food products in case of households with children compared to the other households [28]. The household with preschool children more likely to refer the nutrition label [34]. There may be the impact of the size of a family on the decision to use nutrition label as [16] found in his research that a member increase in the number of school children affect negatively to read food labels. People having children less than 16 years at home have less interest in healthy eating [26].

Special dietary status

A person with some health issue may have to take care while selecting food that they eat. The person with such issue needs to put more efforts in selecting right food. Consumers referred nutritional labels to know about the content of fat or cholesterol in the product. Amount of sugar was generally read by diabetics' person [14]. Special dietary status of a person has a significant effect on the willingness to pay for nutrition information [31]. Respondents with the chronic diseases were more aware about the nutrition label and used it more often [36].

Knowledge and usage of nutrition label

Consumer's awareness towards nutrition label and depth of knowledge about nutrition label affects the usage of nutrition label. Knowledge significantly affect the use of nutritional information and nutritional & health claims on food labelling [17,6]. The consumers' knowledge about nutrition label supports to use label [29]. It may be because the higher nutrition knowledge is associated with the better diet quality [37]. Familiarity of consumer with the product affect whether they use nutrition label or not [38]. Consumers with more knowledge towards nutrition label and having favourable attitude towards nutrition label would more likely to use nutrition label [20]. The consumers with higher nutritional knowledge are more frequently use the nutrition label to choose low-fat food [17].

There exists research with opposite results; there is no impact of knowledge on usage of nutrition label on the usage of nutrition label [13]. People with lower nutrition knowledge will be more affected by health consciousness in terms of their attitude towards labelling [2].

Nutrition label usage and purchase decision

There are many consumers who are aware of the nutrition label and also reading it, the basic issue is, do they make a decision based on the nutrition label? It's really important to know the impact of nutrition label on consumers' purchase decision, because the degree of usage of nutrition label is less

than the degree of understanding of nutrition label [26]. In the case of consumer's first-time purchase of a product, the food label plays a significant role [13,39,23,22,40]. Sometime majority of the customer change their minds, deciding not to purchase the food product [41,27].

Willingness to pay

Consumers' willingness to pay for the product that carry nutrition label is one of the important factor that helps us to identify the importance of nutrition label to the consumers. Individuals having age around 40 years, individuals with special dietary status, higher education and smaller families are more willing to pay for nutrition labels [31]. Price sensitive consumers are less interested in use of labels [25].

Format of label

A nutrition label needs to be simple and accurate so that the user can have easy understanding and trust on it. Manufacturers need to make it easy-to-understand so the goal of usage of nutrition label can be achieve. Updating the Nutrition Facts Panel, developing a uniform labelling system and providing consumers with nutrition information make it easy for consumer to become aware about nutrition label and motivated to make healthier choices [42]. Mostly consumers prefer to have nutrition information listed for 100 grams rather than per serving as its easier to compare the product displayed with 100 grams nutrition label [32,27].

- a. Traffic Light: According to Grunert et al. [26] Traffic lights formate of nutrition label is upto some extent self-explanatory but the consumer may over interpret the severity of the colours.
- b. Front-of-packages: Consumers prefer the front-of-packages and consistent labelling of nutrition across all products [43]. Front-of-pack nutrition labels can increase healthy choices among consumers [44]. Consumers are generally positive about the front-of-pack labelling as it helps to understand label easily [45]. Consumers face little difficulty in understanding FOP nutrition information [26]. There are researches with contrast findings; Consumer might be misleading by thinking that the products with front-of-package symbol are healthier than those without [46].
- c. Guideline daily amount: A Guideline Daily Amount (GDA) is a nutrition label that began in 1998, it's a joint effort of the UK government the food industry and consumer organizations. There is high consumer understanding with the GDA [21] and they could apply the figures given on the GDA in correct way [26]. The GDA coded by colour creates more effect on the usage of nutrition label [47].

Most consulted information

The information, for which consumer is referring label, gives insight about the importance given by consumer to

various components of the nutrition label. Information consulted for purchasing product depends on the consumers' health status, health consciousness, demographic profile, the environment etc. The consumers prefer to look the total fat, saturated fat, sugar and sodium from the nutrition label [37,48]. According to Wade and Kennedy [27] females were more likely to refer the total energy content while the males were more likely to refer the protein related information.

Body Mass Index (BMI)

Body Mass Index is one of the measurement criteria to infer the obesity of a person. It is obvious that a person with higher BMI need to take care of his/her food. Some individuals with higher body mass index may not be necessarily interested in dieting or may not be health oriented; this result may have significant implications for health and nutrition education programs [49]. Obese males and females reported more nutrition label use compared with the non-obese males and females [47]. Consumer's knowledge towards the nutrition label is affected by the body mass index [20]. There are researches with opposite outcomes, people with a higher BMI have less interest in healthy eating [26]. There is negative relationship between time allocated for information search and BMI [50].

Area

Nutritional behaviors varied across their residing regions. Consumer awareness and behavior vary across the residing regions. Indian consumers in the urban area are more aware about the food labels compared to the consumers in suburban area [15]. One of the reasons may be lack of media and health education in rural areas that the people in rural areas have limited access to the health-related information [12,51].

Health consciousness

It is expected that the consumers' concern toward their health is directly and positively related with the consumption of healthy food. The consumer might be self-motivated to have healthy food or it may be because of some disease they have to do so. Bandara BES, et al. [3] has found that mostly consumers purchasing decision is more influenced by the health consciousness. Health consciousness of the consumer affects attitude towards usage of nutrition label [2]. The more respondents with heart disease use nutrition label compared to the other part [29]. There is research with the opposite results too, if we consider the gym users then they are more health conscious as compared to the non-gym users. Wade & Kennedy [27] have found that there was no significant difference between gym and non-gym users [52-54].

Reason for non-use of labels

There are different reasons for non-usage of purchasing packed food product. Out of many, few reasons are most common to various segments of the consumers and few are segment

specific. Inability of consumer to understand the terminology is one of the main reasons of non-use of nutrition label [11,35]. It is also have been found that lack of interest and time to read and evaluate nutrition label is one of the reasons to not refer nutrition label [27]. The small size of the print on nutrition label information creates difficulty to read nutrition and that is also one of the reasons to ignore nutrition label [14]. Many a times respondents found the nutrition label misleading and because of that they don't use it [27]. Other reason for nonuser was, consumer don not believe in nutrition label and they don't have interest in it [11]. Few consumers don't read nutrition label because they found it complicated and too technical to understand [3,17]. The consumers are familiar to the brand or product and that's why they don't read the label [9]. Shoppers for whom taste is an important factor are less likely to read nutrition label [6,8]. The most common reasons for non-use of labels are lack of time, presentation style of information, lack of understanding of terms and role of nutrients for health and concerns about accuracy of information [55-58].

Conclusion

From the above review of literature, it can be concluded that the demographic factors like education, age, gender, marital status, income, household size, children in family, special dietary status, knowledge of nutrition label, body mass index, residential area, and health consciousness are factors play an important role in understanding and usage of nutrition label. Education and income have positive relation with usage of nutrition label. Males are less likely to use nutrition label than females. Age has two opposite effects older respondents tended to have more interest in healthy eating, but less nutrition knowledge. The frequency of purchasing a product also plays important role in the same, there are higher chance that consumer will go through the nutrition label if he/she purchase product for the first time. Married consumers are more likely to refer nutrition label as compared to the counterpart. Household size is negatively related with the use of nutrition label. Level of consumer involvement in purchasing food product may affect positively, there are researchers who found that not only understanding of nutrition label but motivation to use nutrition label is also important. There are many researches carried out on the format of nutrition label but no common outcome is derived so constructive conclusion on this is not possible. There is strong need of a format of nutrition label that can be easily understood by the consumers. It becomes more important when people already have awareness of nutrition labels but because of lack time availability, which is one of the major reasons of not reading label. One of the most effective ways of simplifying the nutrition label is to introduce a simple, easy to understand and unified labelling system.

Limitation

There are ample of research conducted on consumer attitude and behaviour towards usage of nutrition label and various factors affecting usage of nutrition label but the

outcome to change and motivate consumer is not common. So, this is one of the limitations of this research also.

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