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RESEARCH PAPER

FOOD LABEL EXPERIENCES AMONG TERTIARY STUDENTS IN THE WESTERN NORTH REGION OF GHANA

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ABSTRACT

Food labels are important tools for promoting healthy eating, preventing food borne diseases and food allergies. Examining consumers' experiences with food labels helps to measure their impact in fulfilling these purposes. A survey was conducted among 193 students from three Training Colleges in the Western North Region of Ghana. A validated questionnaire was used to solicit information on demographics, nutrition knowledge exposure, food label use, factors and challenges that affect food label use. There were 53.9% males and 46.1% females, with the majority of them within the age of twenty and twenty-five years (86.1%). Most participants viewed food labels as very important information used in the choice of packaged foods (89.6%). Food label information, often read by users were the expiry dates (94.2%), name of the product (89.1%) and manufacturing dates (83.9%). With nutrition information, participants focused very often on proteins (69.9%), fats (62.2%), vitamins and minerals (63.2%). Factors that influenced food label use were nutrition knowledge (73.1%), health status (70.5%) and educational level (61.1%). Even though food label use was high among participants, they strongly agreed that small font size (39.9%), inability to interpret nutritional values (36.3%) and unfamiliar terminologies (35.8%) impeded maximum utilization of the information. In addition, 48.2% agreed that limited time for shopping also limited their use of food label information. The study, therefore, suggests that public education on food labels should be intensified and policies that will simplify food label information should be considered to enhance better understanding and consequently promote healthy food choices.

Keywords: Food label, nutrition label, food label experiences, packaged foods

INTRODUCTION

Food labels promote healthy food choices, food safety and also serve as an effective tool in controlling food allergies which are all of public health concern. Usually, food labels are supposed to provide mandatory information such as product name, manufacturer, expiry and manufacturing dates, quantity/weight, serving sizes, ingredients and nutrients present in the product (Goyal & Deshmukh, 2018). This information serves as an information tool and also as a marketing tool that sells the product (Koen *et al.*, 2016).

The first stage of consumer's interaction with food label is awareness which increases the desire to inquire through reading. Some studies have suggested that a number of consumers are aware of food labels (Olatona *et al.*, 2019; Affram & Darkwa, 2015). There is also a significant relationship between the awareness of food label features and its use (Annunziata *et al.,* 2019; Aryee *et al.*, 2019). Conversely a study reported a low awareness and use of food labels among the respondents even though packaged foods are highly patronised among them (Wahab, 2018).

After awareness and reading of the food label information available, it is processed by conceptualizing the information, design and the manufacturer and comparing with their interests and experiences to arrive at a purchase decision (Zepeda *et al.,* 2013). It is further detailed that as part of the processing, users first form perceptions after they have been exposed to a new product. The perception, together with the knowledge they have in nutrition, help them to conceptualize and make inferences based on the information they have about the product. This further enables them to integrate the information with existing knowledge to make evaluation before they are able to decide whether to buy a product or not (Grunert *et al.,* 2010). This implies that elements such as consumer perceptions, experiences, interests, product attributes, food label information available on the product and nutrition knowledge are very crucial in making the packaged food choice. In this regard some studies suggested that, knowledge in health and nutrition influenced food label use (Roseman *et al.*, 2018). In addition, age, gender, income, household size, level of education and study of nutrition-related courses have been identified (Affram & Darkwa, 2015), together with health issues (Aryee *et al.*, 2019).

Reasons for reading food labels were to have an idea of the product and to know the nutrients in the food (Shine *et al.,* 1997), to look out for the nutritional attributes of the product like salt, sugar, fat (de Morais Sato *et al.*, 2019). Furthermore, consumers mostly search for information on nutrition labels to find the nutrient content of the food, restrictions on food intakes (special diets) and to compare products from different brands (Shine *et al.,* 1997). In spite of all these, some challenges include inability to identify some features and interpret what they stand for (Annunziata *et al.*, 2019). A study in Ghana has revealed that insufficient nutrition knowledge, time constraints and small font sizes affect consumers' use of nutrition labels (Affram & Darkwa, 2015). In India, inadequate graphics and the use of more technical terminologies prevent consumers from interpreting the food label (Robert & Akshay, 2017), while in Ireland, consumers are reported to avoid food labels for reasons such as not interested in nutrition, insufficient time, illegibility of writings and inability to comprehend the terminologies (Shine *et al.,* 1997). Others have also cited familiarity with products, poor visibility, unclear inscriptions and the use of unfamiliar terminologies as reasons for not reading food labels (de Morais Sato *et al.*, 2019).

The trend in food label use shows that users' interaction with the food label information influences their ability to utilise it in the final purchase decision. This is because they

help users to focus on specific information that relates to their health (Wahab, 2018). As such, those who frequently use food labels often select high fibre foods and other healthy options (Christoph *et al.*, 2018). That notwithstanding, few consumers tend to appreciate the significance of food label information and this makes them sometimes reconsider their decision to patronise specific products (Shine *et al.*, 1997). Food label reading could also increase the frequency of food label use and its understanding due to the possibility of assisting in the processing of the information (Miller & Cassady 2015). These reflect a need to continuously study trends in food label use to assess its utilization in the population in making healthy food choices. There seem to be several studies involving the general population but same cannot be said of population sub groups such as students who often use such products. This study thus sought to examine the awareness, use and experiences students had with food label and how these interactions influenced their ability to utilize this important information.

MATERIALS AND METHODS

Study design and site

This was a descriptive survey which was conducted among three Training Colleges in the Sefwi Wiawso Municipality in the Western North Region of Ghana. The survey was used as a baseline data to assess the issues and experiences the students had with food label use prior to implementing an education intervention aimed at improving the understanding of food label information.

Study participants and sample size

Students were selected with the use of quota and convenience sampling for the study. A sample size of 328 was determined using the Slovin's formular (1960), but 193 consented to be part of the study.

Data collection

Data was collected using a self-designed and validated questionnaire, which was distributed online. Information were collected on participants' socio-demographic characteristics, food label use, reasons and challenges with food labels. Participant's demographic characteristics included gender, age, marital status and nutrition knowledge exposure. For their awareness and use of food labels, data included information on their ability to recognise and frequency of use food label information, including the nutritional label.

Participants' views were sought on reasons/ factors that influence the use of food labels where a criterion was used to measure the extent to which factors such as health status, income, household size, work status, educational level and product features influenced their use of food labels. In addition, data was taken on challenges that impeded the use of food labels. These sought to identify difficulties participants encountered while they used food labels.

Data analysis

Descriptive statistics were used to describe the study variables, with categorical variables expressed as frequency distribution with percentages. One sample non-parametric tests (Chi-square goodness of fit and one sample binomial) were used to determine differences within variables. Data were organised and presented in tables and graphs. Statistical significance was considered at $p<0.05\%$ confidence level. Data entry, cleaning, and graph generation were performed using Microsoft Office Excel and IBM SPSS version 26 was used for data analyses.

Ethical consideration

Ethical approval was taken from the Committee on Human Research Publication and Ethics, School of Medical Sciences / Komfo

Anokye Teaching Hospital – Kwame Nkrumah University of Science and Technology: (CHRPE/AP/694/19), before the commencement of data collection.

RESULTS

From the demographic characteristics of 193 respondents, a majority (53.9%) were males, whiles 46.1 % were females. Most of them were within the ages of 22 – 23 years. All participants had been exposed to nutrition knowledge at some point in their educational ladder (Table 1).

Table 1: Socio-demographic characteristics of participants

Characteristics Categories		n (%)	*p-value
Gender	Male	104 (53.9)	0.314
	Female	89 (46.1)	
Age (years)	18 – 19	7 (3.6)	<0.001
	20 – 21	53 (27.5)	
	22 – 23	64 (33.2)	
	24 – 25	51 (26.4)	
	>25	18 (9.3)	
Marital Status	Single	190 (98.4)	<0.001
	Married	3 (1.6)	
Nutrition knowledge Exposure	No	0 (0.0)	N/A
	Yes	19 (100.0)	

*** One sample non-parametric test p-value.**

Data presented as number of respondents with corresponding percentages in brackets with p-values < 0.05 at 95% confidence level. N/A represent non-applicable p-values due to one category of response.

Awareness and use of food label information

All participants (193) were aware of food labels, and a number of them made attempts to read them at both the market and at home (58.5%).

Those who read them at the market alone represented 22.3%, home only was 18.1% and those who read it elsewhere were just 1% of the participants.

Table 2: Participant's awareness and use of food labels

Variable		n (%)	*p-value
Food Label Awareness	No	0 (0.0)	N/A
	Yes	193 (100.0)	
Those who read food labels	No	0 (0.0)	N/A
	Yes	193 (100.0)	
Where Food Labels were read	Store/ Market	43 (22.3)	<0.001
	Home	35 (18.1)	
	Both Store/ Market and Home	113 (58.5)	
	Elsewhere	2 (1.0)	
Opinion on the importance of Food Labels	Very Important	173 (89.6)	<0.001
	Important	20 (10.4)	
	Not important	0 (0.0)	
	Don't know	0 (0.0)	

*** One sample non-parametric test p-value.**

Data presented as number of respondents with corresponding percentages in brackets with p-values < 0.05 at 95% confidence level. N/A represents non-applicable p-values due to one category of response.

How participants read the contents of food labels

The students reported that food label information that was frequently read were the expiry dates (94.2%), followed by the name of the product (89.1%), manufacturing dates (83.9%), whiles an average number of participants always read information on ingredient list (62.7%), name of producer/ brand (59.6%), nutrition and health claims (56.0%) as well as nutrition facts (53.4%). For occasional users, a number of them focused on cooking instructions (51.8%), serving size information (47.2%), country of origin (46.1%), storage instructions (40.9%) and nutrition facts (40.9%). Users rarely paid attention to serving size information and food allergen information.

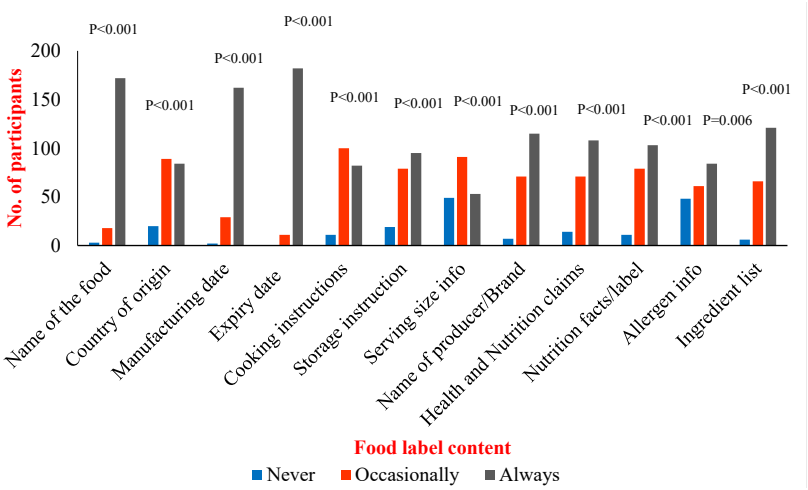

Figure 1: Participants use of contents of food label

How participants use food label nutrition information

A closer look at the nutrition information showed that, most participants (69.9%) were concerned very much about proteins, vitamins and minerals (63.2%), fats (62.2%), health and nutrient claims (60.1%), sugars (58.5%), cholesterol (58.0%), and calories (53.4%). Those participants who often looked at certain nutrition information focused their attention on salt/sodium (49.2%), roughage (47.7%), and sugars (39.9%).

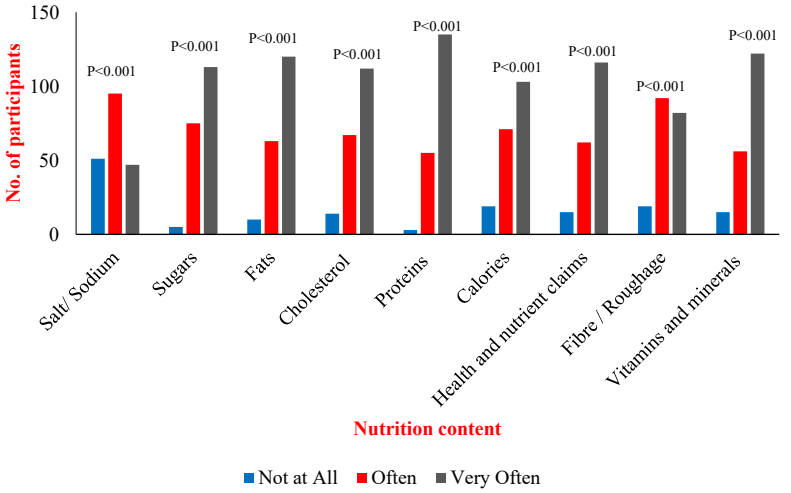

Figure 2: How participants use nutrition label information

Influences and reasons that affect food label use

Among the factors that influence participants' food label use very much, the highest number of respondents was recorded for nutrition knowledge (73.1%), health status (70.5%), educational level (61.1%), and product features (53.4%). The lowest recorded in this category were for household size (26.4%), income (35.8%) and work status (39.8%).

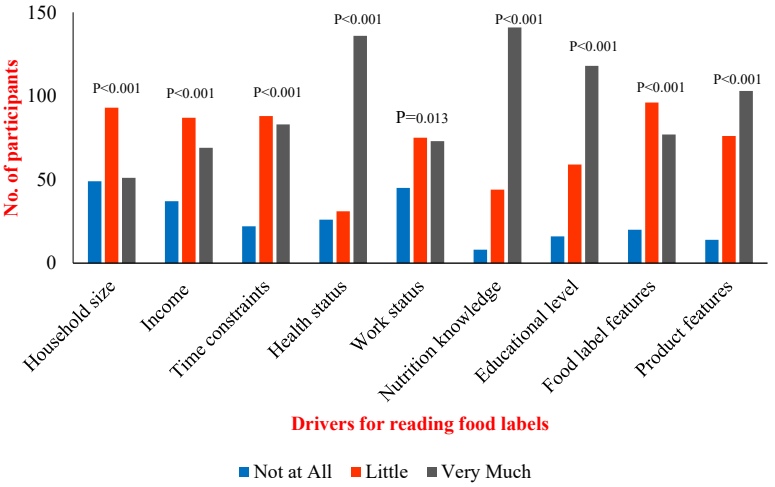

Figure 3: Drivers that influence participants to read food labels.

Challenges participants faced in using food labels

Seventy-seven participants that represented 39.9% strongly agreed that small font size of the writings was the major hindrance for food label use. This was followed by 'difficulty in interpreting quantitative measures' recording 36.3%, then lack of understanding of terms recorded 35.8%.

Meanwhile, about 48.2% of them agreed that limited time for shopping was the greatest deterrent for food label use, followed by insufficient nutrition knowledge with 42%, mistrust for nutrition information recorded 40.9% and small font size 39.9%.

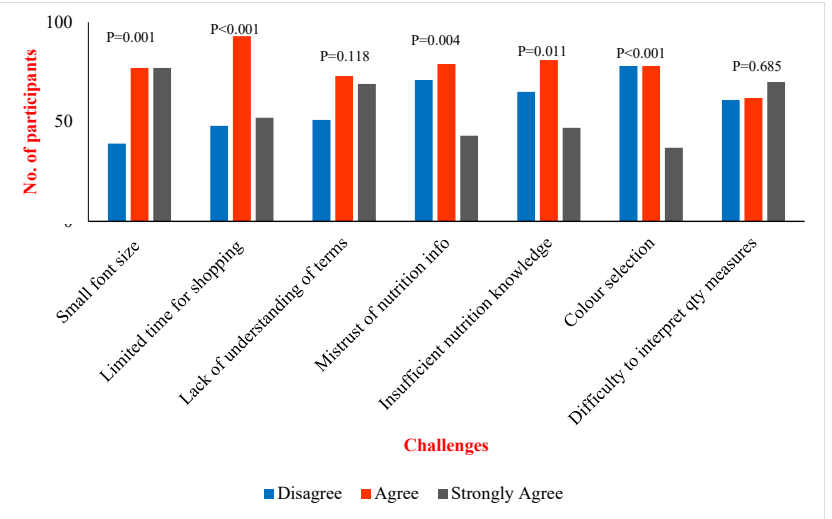

Figure 4: Challenges associated with use of food labels.

DISCUSSION

In this study, a total number of one hundred and ninety-three (193) students participated with majority of them being males. Most of them were between the ages of 20 to 25 with only few of them being married. According to the students, they had all received some form of nutrition education in the course of their training particularly in the secondary and tertiary levels. Nutrition knowledge and higher education have been identified as important attributes that prompts food label reading and sometimes its interpretation (Ducrot *et al.*, 2015), which could be a positive influence in the use and understanding of food label information among these participants.

Food label information use begins with being conscious of the information (awareness), then initiating steps to search for the information through reading, interpreting the information rightly and then making a healthy choice (Azman & Sahak, 2014; Rani & Bains, 2014). In this study, all participants were aware of food labels which increase the likelihood of reading the information. Consequently, all participants also admitted reading the food labels. This confirms what was reported that people who were aware of food labels often use it in their purchase decisions (Annunziata *et al.*, 2019). The use of food labels often occurs in shop or market areas, where consumers take decisions on products available to them. This study is consistent with previous studies that majority of respondents read food labels at the point of purchase (Aryee *et al.*, 2019; Darkwa, 2014; Vijaykumar et al., 2014). In addition, participants continued its use even at home or at the point of use which could lead to the possibility of rejecting some products even after purchase. Meanwhile there was a contrary report showing that awareness and use of food labels was rather low among some respondents even though packaged foods were highly patronised among them (Wahab, 2018).

This study also revealed that most participants value the importance of food labels in promoting healthy eating which will increase their desire to utilize the information. Similarly, other studies have suggested same (Madilo *et. al,* 2020; Aryee *et al.*, 2019; Wahab, 2018). This implies that consumers appreciate the

need to be informed and they know where to find that information. This interest can be enhanced when manufactures provide the information in a way that is easy to read and understand.

Users of food label information may differ in what they look for on food labels but most commonly; they look out for information on expiry dates. This study reflected same where participants most sought for information on the food label was the expiry date. Meanwhile in other studies, participants were more specific on other safety features like production dates, allergic substances, additives and instructions for storage (Madilo *et al.*, 2020; Robert & Akshay, 2017; Aryee, 2013). This shows that consumers are concerned about how safe the product is before considering all other factors like its source and nutritional composition. Despite the assertion above, some respondents rather read food labels to have an idea of the product and know the nutrients in the food (Shine *et al.,* 1997).

Product identification also seems to be of interest to the study participants because apart from the expiry date a number of them also looked out for product names and brands/ manufacturer's name. This is an indication that some students are more comfortable with certain brands due to their preferred standards or quality features. Similarly, participants often looked out for expiry dates, nutrients in the product, producer and where it originated from (Aryee *et al.,* 2019). Another most sought for information was the ingredient list which may be because they are common names of raw materials used that participants could easily relate to which also reflected in another study in Nigeria (Olatona *et al.*, 2019). Participants rather gave a low attention to allergen information, serving sizes and country of origin. For all the food label features, there were significant differences in the responses provided.

On nutrition-related information, most participants paid attention to proteins, fats, vitamins and minerals, which can be found in the nutrition fact panel as well as health and nutrient claims. In another study, participants preferred to read the nutrition fact panel, followed by the ingredient list and then health claims (Savoie *et al.*, 2013). Health and Nutrient claims seem to be simple and credible nutrition information to consumers because of its ability to relate the nutritional composition of products to their health and nutritional benefits. In all, consumers use nutrition information to take decisions on the quantity of nutrients in a product, determine the quantities as low or high levels, to compare nutrients in similar products, determine the quantity of nutrient in a serving and to judge the healthiness or otherwise of products (Cowburn & Stockley, 2005). Participants also believed strongly that nutrition knowledge influenced their use of food labels possibly because the food label information relates to health and nutrition. Health status was also identified as another significant drive to the use of food labels because users may want to either improve their health condition or prolong their lifespan. As young adults who are conscious of their weight and body image, it is not surprising to see health reasons being a factor that affect food label use. In addition, a number of the participants admitted that level of education and product features also influenced their use of food labels. Nutrition knowledge, health status and product attributes seem to reflect in several studies (Aryee *et al.*, 2019; Roseman *et al.*, 2018; Affram & Darkwa, 2015; Shine *et al.*, 1997). Meanwhile, there has not been enough evidence to show whether general nutrition knowledge increases the frequency of use of food labels or rather the understanding of food label information.

Other factors such as household size, work status and income level did not seem to have any significant effect on participant's food

label use since they were still students. Among the three criteria used to assess the nine factors of food label use, it was revealed that the number of responses provided for each factor had significant differences ($p< 0.001$).

Despite the continuous promotion to increase food label use, this study has revealed that participants were hindered by illegible writings; which implied that not all inscriptions are always readable. This may be attributed to small font sizes, font styles, colours used for the writings and the background colour. Similarly, another study reported that consumers had difficulty identifying some features on the food label and also not able to interpret what they stood for (Annunziata *et al.*, 2019).

Another challenge raised was difficulty interpreting quantitative measures. Usually, nutrient quantities are presented in volumes or as percentages of average daily requirements, which may not be too clear for most readers hence, admitting the challenge. Lack of understanding of terms used was also identified as a major challenge together with limited time for shopping, insufficient nutrition knowledge and mistrust for nutrition information. Similar to other studies, participants desired for more information and demanded a better way of presenting it (Madilo *et al*., 2020), which implied their dissatisfaction of the way food label information was presented. To confirm the above, insufficient nutrition knowledge, time constraints and small sizes were cited to limit food label information use in this study. Among the challenges that affect food label use, there were significant differences between the responses provided except for 'lack of understanding of terms' (p=0.118) and 'difficulty interpreting quantitative measures' (p=0.685).

CONCLUSION

In conclusion, there was high awareness of food labels among the participants. They also appreciated usefulness of food labels while patronising packaged foods. Food label use was very high among the respondents; extending from the point of purchase to the point of use of the products. Participants were more interested in safety features, product source and product composition than other information provided. They were often influenced by nutrition knowledge, health status, product features and food label features to use food label information even though they were sometimes hindered by illegible inscriptions, difficulty in interpreting quantitative measures and lack of understanding of the terminologies used. It is recommended that policy makers should consider developing a standard way of presenting food label information in a simple and concise way that users could easily relate to and see to its implementation. This will ensure manufacturers' compliance, so that users will be more interested to read and interpret the information rightly to make healthy food choices that can reduce the prevalence of chronic diet- related diseases.

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