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## CONSUMERS' KNOWLEDGE, UNDERSTANDING AND USE OF FOOD LABEL INFORMATION, AND HOW IT AFFECTS PURCHASING DECISION IN HO, GHANA

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### Abstract

The main objective of the study was to assess consumers' knowledge, understanding and use of food label information. Data was collected from the capital city of Ho Municipal district in the Volta Region of Ghana using a Survey questionnaire and observation. Participants were adults, aged 18-65 years (n=600; 53%, 47%) randomly selected to assure increased response rate. Observation, reading, knowledge, understanding and use of food label- information were the main outcome measures used. Chi-square and Kruskal test were used to assess differences in participants' characteristics and use of food labeling in food purchase. Findings showed high awareness ( $P < 0.05$ ) and frequency in food label reading among participants but this did not necessarily influence their purchase of food. Insufficient knowledge, time constraints and small font sizes were reported by participants as the main factors that prevented them from reading and using food label. Although sex ( $P < 0.89$ ) did not influence participants' reasons for reading labels, age did at  $P < 0.01$ . Younger consumers read labels to compare products; older ones did so out of curiosity and for special dietary needs. Knowledge, understanding and use of food label information did not significantly differ with gender but did with age. Understanding food labels through education is needed to promote use among both young and old consumers.

**Keywords:** Food label, nutrition facts, knowledge, understanding

### 1. INTRODUCTION

Diabetes prevalence in Ghana increased from less than 1% in late 1950s to 1970s to almost 10% in 2009 (Aikens *et al.*, 2009). IDFA's 2013 report of 8,529 diabetes related deaths in Ghana versus 2,752 reported earlier by WHO (2011) shows a great increase in diabetes prevalence. Another chronic disease similar to diabetes such as hypertension has been tagged as an imperative public health issue<sup>5</sup> in Ghana (Bosu, 2010). Diabetic and hypertensive individuals often rely on medications for managing their condition. These medications are often expensive and out of reach for some individuals who cannot afford them, thus, increasing their risk of dying from such conditions. Healthy eating, exercising and positively changing one's lifestyle could help reduce high prevalence of diabetes and hypertension. Globalization has increased the influx of foreign processed packaged foods on the Ghanaian market and for convenience, these are highly patronized. An important way to get people to make healthy food choices would be to educate them to read and use food labels. Internationally, food labeling has effectively achieved healthier consumer consumption behaviour and product development which transcends into improved health outcomes (Susannah, 2011). A review of European consumers showed an improvement in individuals' interest to eat healthy

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(Grunert & Wills, 2007). Reports by the World Health Organization showed that dietary factors account for approximately 30% of cancers in most industrialized countries stressing the importance of food nutrients in the growth and maintenance of good health in humans. (WHO/FAO Diet, 2003). Food industries in more developed countries provide more detailed nutrition information in food labels since they are often used as important tools for communicating dietary information to consumers (Petrovici *et al.*, 2012).

The Ghana Food and Drugs Board (GFDB) (2006) enforces food labeling on all processed pre-packaged foods found on the Ghanaian market, but are consumers making use of such information? Amid increasing concerns about health and its relationship with nutrition among Ghanaians, the study looked at evaluating consumers' knowledge, understanding and use of food label information when purchasing processed pre-packaged foods. It is thus important to enlighten Ghanaian consumers about the significance of reading food labels prior to purchasing pre-packaged foods. Hopefully, findings from this study will help identify gaps in the proper use of food label information and healthy eating. Through this, new data related to the use of food labels by consumers will be added to the scanty existing ones which are necessary to implement public health commendations and programs to improve consumers' use of food label information.

## 2. LITERATURE REVIEW

Even though there is no doubt that nutrition labeling has emerged as a prominent policy tool for promoting healthy eating (Campos *et al.*, 2011), there is very limited current research on this subject in Ghana. According to existing literature, food labeling acts as a medium that carries information about a product (Katarzyna *et al.*, 2010). Food labels provide nutrition labeling, standardized serving sizes, information on saturated fat, trans- fat, cholesterol, dietary fiber and other major nutrients in reference values and health claims (Anderson *et al.*, 2010). Hieke and Taylor (2012) define nutrition labeling as 'all forms of information disclosure on a product, ranging from mere nutrition fact panels to daily reference values, recommendations, health claims and disclaimers.' According to Susannah (2011), nutrition labeling refers to any labels on packaged food delivering nutrition information, including front-of-pack messaging and nutrition information panels positioned on the side or rear of packaged food. The Ghana Food and Drugs Board (GFDB) (2006) describe it as the primary point of contact between the producer and the purchaser and forms a vital part of producers' marketing plans.

Nutrition labeling appears on most pre-packaged foods in a table format with the title "Nutrition Facts" and it provides the nutrient content of a food based on a specific amount (Nutrition Labeling ... Get the Facts! Series, 2003). The existing literature on food labels in Ghana has a focus on one or two of the following: consumers' awareness, knowledge, understanding and usage of food labels (Azila-Gbettor *et al.*, 2013; Darkwa, 2014; Ababio *et al.*, 2012; Osei *et al.*, 2012), but offers only limited studies on a combination of these and how they affect consumers purchasing decisions in relation to health.

Food label use can be looked at in different perspectives. From policy perspective, it is an assurance of promoting healthy eating while protecting consumers' free will to choose from several options. From consumer point of view, it provides a means of reducing the irregularity in product specific information provided to consumers by producers. From a producer or retailer perspective, it provides a means of showing positive nutritional characteristics of products in a plausible way (Grunert, 2013). Food labels are generally acknowledged to have an important role in communicating product-related information to consumers and are considered to have the potential to influence food choice and dietary behaviour (Mackison *et al.*, 2010).

Nutritional information is said to be an effort to provide consumers, at the point of purchase, with information about the nutrition content of individual food products to make it possible for the consumers to choose nutritionally appropriate food (Grunert *et al.*, 2010b). Subsequently, the choice of healthier foods may be accomplished through the use of nutrition labels, one of the major

instruments in helping people make better food purchase decisions and adopt healthier eating patterns (Nayga, 1996; Drichoutis *et al.*, 2006; Grunert and Wills, 2007; Mhurchu and Gorton, 2007; Feunekes *et al.*, 2008; Norgaard and Brunso, 2009). On the other hand, consumers' understanding of the information would determine how the food label's information is used during food choices (Grunert and Wills, 2007). In addition, consumers' use of food labels particularly refers to their reading, interpretation and evaluation of the information on food labels. Thus product information is of no significance if consumers are unable to interpret it or use the information to their advantage after reading (Dimara and Skuras, 2005).

Drichoutis *et al.* (2005) established that increased chronic diseases correlated with diet and lifestyle factors. Thus, both scientific and non-scientific interest in nutrition information search behaviours has increased. Drichoutis *et al.* (2005) examined from a theoretical perspective the acquisition of nutrition information as a health enhancing activity. They reported that consumers are more motivated to use food labels during food choices when they are able to connect benefits with the use. Consumers of pre-packaged foods have made conscious choice of foods with respect to their preferences, health status and needs. Food labeling information is extremely useful for people who are on special diet or with nutrition related health problems and diseases such as obesity, diabetics, cardiovascular diseases and various types of cancers, as it helps them to make informed choices of food (Washi, 2012); Schiffman and Kanuk (2007) have shown that consumers tend to search for and evaluate product information when they perceive higher risk associated with use of the product and thus suggest that consumers need to be motivated in order to fulfill existing needs. Reviewing consumer understanding and use of nutrition labeling, Cowburn and Stockley (2005) found that consumers merely look at nutritional information on food packages without necessarily processing it. Probably motivating consumers would help them obtain the maximum health benefits from using nutrition information. Earlier research therefore points to the significance of consumer motivation and consumer knowledge for use of food label information in making food choices. Using these studies as a guide, we will adopt Schiffman and Kanuk (2007) framework on consumers' decision-making processes linking the internal and external influences that motivate and influence consumers to read food label information in addition to some consumer behavior theories. We will also present experimental data on the interrelationship of these constructs based on information collected from consumers in Ho, Ghana.

### 3. CONCEPTUAL FRAMEWORK AND AIM OF STUDY

In formulating a conceptual framework for this study, we dwell on earlier studies explaining how consumers' search for and use of nutrition information is influenced by three factors: internal and external factors, and motivation. Schiffman and Kanuk (2007) define consumer behaviour as "the behaviour that consumers display when searching for, purchasing, evaluating and disposing of products and services that they expect will satisfy their needs." Belch and Belch (2007) also define consumer behaviour as 'the process and activities people engage in when searching for, selecting, purchasing, using, evaluating, and disposing of products and services so as to satisfy their needs and desires'. Several researchers have suggested that food labels have the potential to alter consumer purchasing behaviour (Drichoutis *et al.*, 2006; Mhurchu & Gorton, 2007; Mackison *et al.*, 2008).

Schiffman and Kanuk (2007) explained how consumers deal with the various processes that help them choose products that best fulfill their needs amid multiple options. Thus how consumers evaluate food label information may have an influence on their decision to purchase the food product. According to Grunert and Wills (2007), consumers actively or accidentally search for information on food labels if they understand the information. Others found consumers' comprehension of nutritional information on food labels to depend on their cognitive abilities to read, evaluate and interpret the information on the label (Schiffman and Kanuk, 2007; Cowburn and Stockley, 2005). The trans theoretical model of behaviour change in the 1990s was applied to a variety of behaviours. In the 2000s, it was applied to a wide variety of new behaviour change challenges. By the 2010s, the model was used in situations where changing ones behaviour increased the chance of changing other behaviors.

Providing information is one thing and consumers' using the information is another. Bandura's Social Cognitive theory proposes that individuals are driven more by external forces and not by inner forces. He further stresses individuals' need for incentive to perform behaviour irrespective of their ability to perform (self efficacy). Behaviours of others are often determined by their beliefs and values about outcomes or by beliefs about what others think should be done as proposed by the theory of planned behaviour. Consumer behaviorists have created models that attempt to imitate the steps taken by humans in food purchasing decision making outside the mainstream of food choice theory (Bettman, 1979). The trans theoretical theory which assumes that people go through a series of stages when changing their behaviors has been a popular process model for sometime (Prochaska *et al.*, 1997). The trans theoretical model explains that to help individuals adopt a behaviour, it is essential to know which stage they are. For example, individuals in the pre contemplation stage require awareness about a behaviour to enable them contemplate making a change, or at other stages may need consciousness, motivation etc. This theory has been successfully applied to fruit and vegetable consumption by Ling and Horwath (2001). Given that it highlights the fact that individuals may be affected by almost distinctive blends of factors makes it a key model that has shaped nutrition promotion methods (Bringberg, 2000) through doubling the effectiveness it brings about dietary behavior change as other approaches.

Education as an internal influence is vital for reading, understanding and using of food label information. Macanda (2005) found less literate and less educated consumers to be vulnerable, and were often irrational about food and health issues thus not benefiting from most of the product information on a food label. In terms of health status, Cowburn and Stockle (2005) reported a frequent use of food label information among consumers with dietary restrictions who wanted to avoid certain nutrients and assess nutrition profiles. Blackwell *et al.* (2006) pointed out that food labels when used as a point-of-sale stimulus (external influence) involve five steps of information processing. Exposure, senses stimulation, information processing, relevant information grasping consumers' attention and relating relevant information to a specific purchasing need. For example, health-inquisitive consumers may be drawn to nutrition information on food labels (Kempen *et al.*, 2011). Brand familiarity as an external influence leads consumers to make spontaneous food product decisions (Singla, 2010), or thoroughly comparing available product alternatives (Mullins *et al.*, 2005). Adamowicz and Swait (2011) found that continuous purchase of the same kind of food items became routine and resulted in low-involvement purchase decisions among consumers. Mullins *et al.*, (2005) also found that consumers tend to select products with preferred characteristics such as ease of preparation, nutritional content or country of origin among alternatives. Others stated that organic foods were consumers number one choice over other attributes like low price (Schiffman and Kanuk, 2010; De Magistris and Gracia, 2008; Mullins *et al.*, 2005).

When it comes to consumers' understanding of food label information, one can differentiate between consumers' subjective understanding which is the consumer's own perception or meaning of the information and objective understanding which refers to the consumer's interpretation of the information that is like-minded with what was anticipated by the sender (Grunert & Wills, 2007). Both the subjective and objective understanding are impacted by both the internal and external influences as shown in the conceptual framework.

Although the use of nutrition labels has increased worldwide, it does not complement consumers understanding of food label information (Ni Mhurchu, 2006). Consumers' understanding of food labels varies within countries (European Food Information Council (EUFIC), 2005). Cowburn's and Stockley's (2005) systematic review of consumers' understanding and use of food labels worldwide reported that consumers were often confused about numerical information presented in food labels. Similarly, Kasapila and Shawa (2011) reported that about 74% of consumers did not understand the numerical information and terminology used in labeling when they reviewed consumers' understanding and use of food labels in Zambia. Other studies have found that consumers experience difficulties understanding the nutritional information on food labels, especially the terminology used (Cowburn and Stockley, 2005; Peters-Teixeira and Badrie, 2005). A study in the UK also found several of its respondents were unfamiliar with some of the terms used in presenting nutritional

information on labels (Synovate, 2005), similarly, a quarter of respondents in another study found labels difficult to understand while two thirds of the same respondents found food labels easy to understand (Taylor, 2007).

Osei *et al.* (2012) studied consumers' use and understanding of food Labels in Kumasi, Ghana and reported about 80% accessed food label information prior to purchase. About 90% of these consumers reported they understood the nutritional information they read while only about 7% reported they did not understand. Klein (2005) reported that consumers in the North West Province of South Africa did not understand terms and abbreviations used on food labels and suggested that education could help. Mannell *et al.* (2006) found French consumers had difficulties reading and interpreting food label information and mentioned that consumers suggested printing labels in large font sizes and in different colours.

In New Zealand, Mhurchu and Gorton (2007) found balancing of nutrients to be the main issue that caused consumers to make choices based on the fat content of food regardless of other nutrient levels. Grunert and Wills (2007) also noted that consumers were more interested in the amount of calories and/or fat, salt and sugar contained in food. Looking at the different sources from which consumers received knowledge on food such as the media, Katarzyna *et al.* (2010) found food labels to be the most important source. Lin and Yen (2008) on identifying that consumers' saw the use of food labels as useful to their health and thus used it in their food choices, suggested nutrition education as a motivational factor in consumers' use of food labels.

Women were generally found to process nutrition label information better than men (Campos *et al.*, 2011; Raspberry *et al.*, 2007) probably because they tend to be more conscious about calories while planning meals for the family. Hendri *et al.* (2007) reported higher scores on nutritional knowledge for women than men contrary to that reported by Barzegari *et al.* (2011) when they reported that there was no significant difference between males and females when it came to knowledge in nutrition. Ollberding *et al.* (2010) reported that more females than males read serving sizes (73% vs. 27%) and health claims (67% vs. 33%) on food packages in a study. Satia *et al.* (2005) stated that women's food choices were more influenced by food label use than their male counterparts and they trusted and used food label information more. (Kim *et al.*, 2005; Variyam and Cawley, 2006; Blitstein and Evans, 2006; Mandal, 2010 and Wiles, 2006) highlighted the media's influence on female consumers' interest in food labels. They further added that the traditional role of women to make the household food choices and purchases also increased their interest in food label use. More women reported reading nutrition labels than men (82% vs. 73%) when Satia *et al.* (2005) analyzed the demographical factors of self-reported food label use among North Carolina African Americans.

Hess *et al.* (2005) hypothesized that a higher educational level leads to greater understanding of nutritional principles, which tends to improve consumers' ability to comprehend nutritional information on food labels. Education is known to influence use of food labels through better information processing (Viviane and Laurence, 2013). Wiles *et al.* (2009) found that consumers with tertiary education were more likely to use nutrition information than those with secondary education. College students were more likely to use food labels than high school students (Ollberding *et al.*, 2010) thus consumers with higher education were more likely to use food label information (Drichoutis *et al.*, 2006; Blitstein and Evans, 2006; Mandal, 2010). Viswanathan *et al.* (2009) reported that 'literacy level has a significant effect on consumers' ability to process and understand the nutrition facts panel'. In their analysis, they showed that only highly literate participants found summary information on food labels helpful. Mahgoub *et al.* (2007) highlighted lack of education as one of the barriers to effective use of nutrition information. Research showed that price or taste orientated consumers were less interested in the nutritional quality of food, thus, did not show interest in food label (Drichoutis *et al.*, 2005; Gracia *et al.*, 2007).

## 4. METHODOLOGY

A cross sectional, descriptive market survey utilising both observation and questionnaire were used to determine consumers’ awareness, reading, understanding and usage of nutrition information, and how these influence their purchasing decisions.

### 4.1. Measures

A questionnaire was self-developed to measure the key variables in the adopted conceptual model in Fig. 1: internal influences, external influences and motivation and how these affect food choices of the consumers studied. The external influences comprised, basically, demographic characteristics and situational factors including gender and education. Respondents’ motivation which relates to searching, reading and use of nutrition information on food labels was measured by asking respondents if they read food labels prior to purchasing food products and if they did, under which of the following circumstance(s), ‘At the point of buying’, ‘just before using products’, or ‘After using products’. Consumers were also asked if the reasons for reading food labels fell within the following: ‘Product comparisons’, ‘Curiosity’, ‘Advice from nutrition counseling’, ‘Family member habits’, ‘Special dietary needs’ and ‘Others’. If they did not read food labels prior to purchase of food products, then they were asked if their reasons for not doing so fell within any of the following: ‘reading food labels are time consuming’, ‘do not have enough knowledge to understand what is read’, ‘usually find the terms in food labels confusing’, ‘often choose food product on the basis of price and taste’, ‘usually believe all the claims on the food label so do not need to read’, and ‘often purchase food products out of habit’. For consumers who read food labels, they were also asked if reading food labels had ever caused them to change their mind about a product because of the information read prior to purchasing food products, if it did how often that happened and the reasons for the change. For external influences, respondents were asked questions that covered the impact certain food label information had on their food choices such as manufacturing and expiring dates, ingredient list, nutritional information and nutrient content. The study’s proposal was fully reviewed and approved by a University Institutional Review Board. Oral consent was also obtained from all study participants before questionnaires were administered to them.

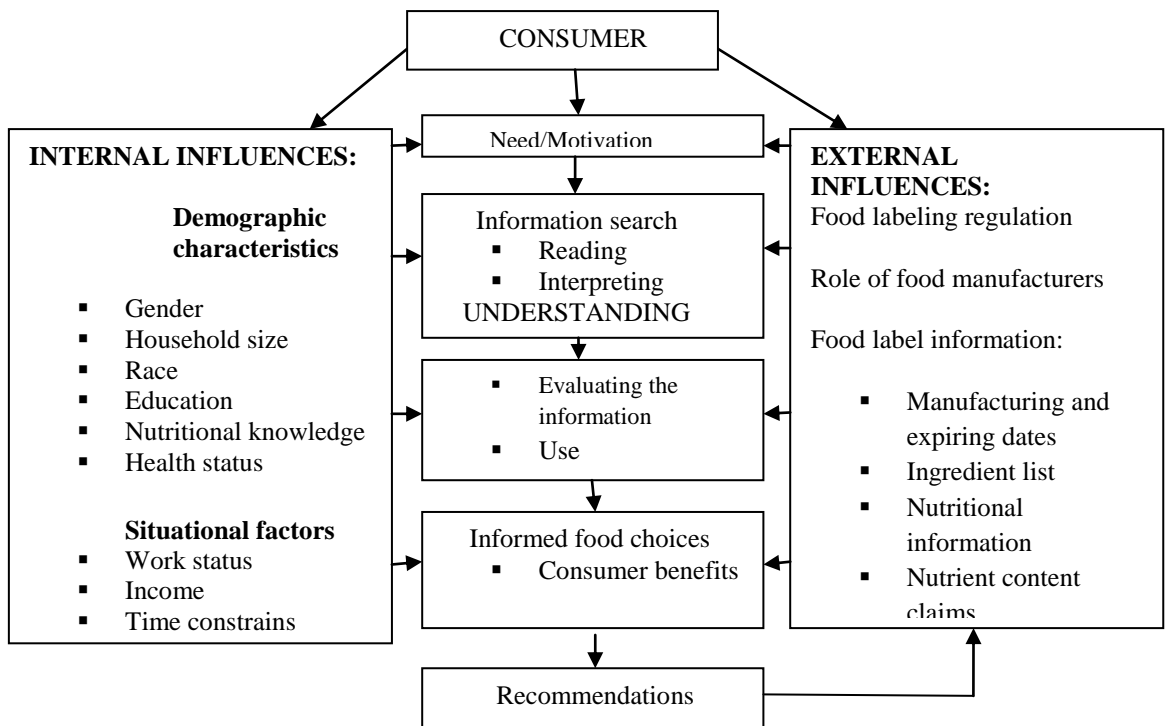


Figure 1: Conceptual Framework

#### **4.2. Data collection and sample**

The questionnaire was pre-tested among a sample of 30 consumers in Ho. Only minor changes were made to the questionnaire based on the pre-test. The mall intercept technique was used to randomly select 200 consumers from each of the three largest grocery stores in Ho used for the study. In total 600 administered questionnaires were retrieved from the three largest grocery stores in Ho between November 25 to December 24, 2014. Ho is one of the five municipal districts in the Volta Region of Ghana. With a population of 214,612 out of a total of 2,118,252 for Volta Region, it is considered the most populated district in the Volta Region of Ghana (Ghana Health Service-2010 Census). The three stores used for the study were purposively selected based on their large size, variety of foods sold and the large number of consumers they attracted. Questionnaires were administered to consumers aged between 18 and 65 years, who purchased at least one product from the stores and were willing to respond to the questionnaire.

For the in-store observation, researchers were positioned at the end of the aisle of different food product categories, with an excellent view thereof. Observation started when a consumer arrived at the aisle with the obvious intention of selecting a food product. A record was made with regard to each selected product as to whether or not the customer read the label, ignored it or did not look at the product in detail before placing it into the shopping basket or back on the shelf. Documentation on customers who left the aisle without placing at least one product in their basket was discarded. Any consumer who selected and paid for at least one item was approached, briefed on the study and once willing to respond to questionnaire, informed oral consent was obtained from them prior to handing them the questionnaire. Observational data for shoppers who declined were also discarded. Demographic characteristics of sample can be seen in Table 1.

#### **4.3. Data analysis**

Data collected from the three stores were pooled for analysis. Questionnaire responses were coded, input into SPSS version 17 and analysed. Each construct was analyzed to see how demographic variables affected it.

Data obtained was normally distributed without any outliers when skewness was determined using SPSS version 17. Missing data was treated as non-response and means and standard deviations were reported. The main statistical tools used in the analysis were the Chi – square test for independence and the Kruskal test for  $k$  – independent samples. Descriptive statistics frequencies and percentages were presented.

### **5. RESULTS**

#### **5.1. Demographic distribution of respondents**

The demographic characteristics of respondents are shown in Table 1 below. Males ( $n= 320$ ; 53%) and females ( $n=280$ ; 47%) including the non -response of 12. Most of the respondents in this study were in the 15-35 years age bracket and constituted 82% of the total sample. The ages of respondents were categorised into youth (15–25years), young adults (26–35year) and older adults ( $\geq 36$ years). Respondents were mostly single as a result of never being married as well as highly educated. About 89% of the respondents had tertiary education and the same number never being married. Although there were consumers from other parts of the world, they formed the minority with the majority being Ghanaians (89%). From observation, about 32% ( $n=160$ ) of the 492 consumers who responded that they read food labels prior to purchasing food products actually did so while shopping in store. The remaining 68% ( $n=332$ ) consumers who although stated that they read food labels prior to purchasing food products were not observed to have done so while shopping (Table 2).



**Table 1: Demographic distribution of respondents/consumers**

Variable	Frequency	Percentage (%)
<b>AGE(Years)</b>		
15-25	325	54.2
26-35	176	29.3
36-45	66	11
56-65	8	1.3
66-75	3	0.5
*Non Response	12	2
<b>Education</b>		
No Education	2	0.3
Basic	2	0.3
JHS	11	1.8
SHS/Voc/Tech	40	6.7
Tertiary	536	88.9
*Non Response	9	2
<b>Gender</b>		
Male	320	53.3
Female	268	44.6
*Non Response	12	2.1
<b>Country of Origin</b>		
Ghana	572	95.3
Togo	6	1
Nigeria	3	0.5
South Africa	1	0.2
USA	4	0.7
Canada	2	0.3
*Non Response	12	2
Total	600	100

\*Non Response varies with each variable but the highest number was 12

**Table 2: Awareness, knowledge and reading of nutritional information among consumers**

Statement	Frequency	%
<b>Awareness of nutrition information</b>		
Yes	540	90
No	60	10
<b>Knowledge of healthy diets</b>		
Yes	233	38.8
No	367	61.2
<b>Reading Nutrition Information</b>		
Yes	492	82
No	108	17.8
Reading regularly	221	36.8
Not reading regularly	239	39.8
Not Applicable	140	23.3
Total	600	100

When asked whether or not they have had any special education regarding the importance of healthy diets to the body, more than half, 60% (n=367) responded “No”. The remaining 233 respondents who mentioned that they had some formal education on the importance of healthy diets to the body added that they obtained such information from school and the media (this information was extracted directly from the data and not presented in a table). As shown in Table 2 above, about 90% of the respondents stated that they were aware of nutrition information on food products, yet 48 (8%) of

them did not read food labels prior to purchasing food products. Also not all the 82% (n=492) who stated that they read food labels prior to purchasing food products did so regularly. Almost half of those who stated that they read food labels prior to purchasing food products did so regularly (37%) whilst the other half (39%) did not read food labels regularly.

**Table 3: Reasons given by respondents for reading food labels by gender**

Statement	Male Frequency	Female Frequency	Total	Probability
Product Comparison	83	65	148	0.23
Curiosity	104	87	191	0.30
Advice	67	60	127	0.19
Family habit	12	9	21	0.03
Special dietary needs	56	58	114	0.18
Other	25	19	44	0.07
Total	347	298	*645	1.00
Chi-Squared Statistic			1.66	
Degree of freedom			5.00	
P-Value			0.89	
Chi-Squared Critical			11.07	

\* The total is more than 600 because some respondents selected multiple statements

Results from the in-store observation, however, showed that only 32% of the 37% respondents or consumers who reported they read food labels regularly prior to food purchase actually read the food labels. This shows a 5% over reporting of reading food labels among respondents. Majority of respondents (69%; n=414) mentioned that they obtained nutrition information from reading food labels, with 8% (n=53) obtaining the same information from the media, and about 3% (n=17) obtaining it from family and friends. Reasons given by either male and female respondents or consumers for reading food labels on food products prior to purchase are presented in Table 3 above. The two most common reasons provided by respondents for reading nutritional information prior to purchasing of products were comparison of products and curiosity of knowing the food product.

Reasons provided by respondents or consumers for reading food labels on food products were also compared for the different age categories or grouping and presented in Table 4 below.

Gender did not seem to influence the reasons respondents or consumers gave for reading food labels since there was no significant difference statistically between reasons given by males and those given by females (p-value of 0.89 shows  $p > 0.05$  or 0.01). According to Fisher’s approach, the null hypothesis is true and accepted. Accepting the null hypothesis that there is no difference between the reasons provided by males from that provided by females, however, does not mean the effect is important or does not give any indication of how large or small the effect is. Age on the other hand did significantly influence respondents’ reasons provided for reading nutrition information. The probability value of 0.00 shows  $p \leq 0.05$  or 0.01, thus making the null hypothesis false and rejected. For age to be statistically significant means or signifies that the effect is real and not due to chance. Younger and older adult respondents or consumers were more likely to read food labels for the purpose of comparing products, curiosity allowing nutrition counseling while older respondents or consumers did the same more for the sake of curiosity and meeting dietary needs.

**Table 4: Reasons given by respondents for reading food labels by age**

Statement	Age in years-Frequency			Total	Age in years-Percent (%)		
	15-25	26-35	36-75		15-25	26-35	36-75
Product comparison	84	51	13	148	13	7.9	2
Curiosity	103	58	30	191	16	9	4.7
Nutrition counseling	86	25	16	127	13.3	3.9	2.5
Family member habit	11	9	1	21	1.7	1.4	0.2

Special dietary needs	45	41	28	114	7	6.4	4.3
Others	28	11	5	44	4.3	1.7	0.8
Total	357	195	93	*645	55.3	30.3	14.5
Chi-Squared Stat.				27.39			
Degree of freedom				10			
P-Value				0			
Chi-Squared Critical				18.31			

\* The total is more than 600 because some respondents selected multiple statements

**Table 5: Point at which respondents read food labels by gender**

Statement	Male Frequency	Female Frequency	Total	Percent (%)
At the point of buying	180	162	342	57.0
Just before using product	61	62	123	20.5
After using product	9	4	13	2.2
Not applicable	81	41	122	20.3
Total	331	269	600	100
	Value	Df	Assympt. Sig. (2 sided)	
Pearson Chi-Square	2.19	3	0.53	
Likelihood ratio	2.24	3	0.52	

Level of significance  $\alpha \leq 0.05$  Non-applicable stood for those who were not sure when exactly they read the food label

Either Male or female respondents’ or consumers’ responses to when they read food labels are shown in Table 5 above. The percentages of males who stated that they read food labels at the point of buying a food product (30%) or just before using the food product (10%) were close to those of their female counterparts (27% and 10.3% respectively). Contrary to these similarities, the percentages of males who stated that they read food labels after using the food product or did not have specific times when they read food labels (Not applicable option) were almost twice the percentage of females who stated the same points when they read food labels.

**Table 6: Point at which respondents read food labels by age**

Statement	Age in years			Total
	15-25	26-35	36-45	
At the point of buying	174	109	59	342
Just before using the product	64	40	19	123
After using product	10	2	1	13
Not applicable	40	60	22	122
Total	288	211	101	600
	Value	Df	Assympt. Sig.2 sided	
Pearson Chi-Square	4.8	6	0.57	

Level of significance  $\alpha \leq 0.05$  Non-applicable stood for those who were not sure when exactly they read the food label

As seen in the case of gender, several respondents or consumers from the Different age groups stated that they read food labels at the point of buying food products as well as just before using the food products. Both age and gender did not seem to influence the point at which or when respondents/consumers read food labels on food products (Table 5 and 6).

## 6. DISCUSSION

In the present study, an in-store observation was combined with a structured questionnaire and used to collect information on consumers' knowledge, understanding and use of food label information and how these affect their purchasing decisions in the Ho Municipality, Ghana. The results indicated a high level of education among consumers. About 89% of the consumers in the present study had tertiary education. Tertiary education in Ghana encompasses the universities, polytechnics and all

the colleges of education. Literate participants in a similar study reported that they found summary information on food labels more helpful (Mahgoub et al., 2007). Further, they stated that the level of literacy had a significant effect on consumers' ability to process and understand nutrition information often presented in food labels. Contrary to these findings, a slightly lower percentage (66.7%) of the respondents in another similar study was reported reading food labels (Jensen, 2011). Out of this percentage, 24.7% 'always' read food labels and 42.0% 'sometimes' read food labels. However, the authors attributed what they observed among the study respondents to supermarket settings rather than level of education. To support this attribution, they stressed that when consumers are constantly exposed to food labels while picking up food products from supermarket shelves, they tend to read these food labels more often and are impacted by what they read. A similar study in the UAE reported a 98.8% level of food label reading among its consumers (Adamowicz, & Swait, 2011).

This trend can be seen in other similar studies conducted in other parts of Ghana. In the Ashanti region of Ghana, highly educated male consumers were more likely found to read and use food labels than other males (Osei et al., 2012). Similarly, another study also reported that more than one third of its participants were high school and tertiary-level students between the ages of 15 and 25 years (Darkwa, 2014). Being the largest city in the Volta region, Ho has several schools and colleges, and thus a large population of students and teachers. This probably explains why the study sample is highly educated, young and either single or never married. Women were more likely to use the information they read from food labels during food purchasing than men. In the same way, older adults were also found to use the nutrition information they read from labels to guide their choices during food purchasing than the younger consumers.

Those most likely to use nutrition information on food labels when purchasing food products were found to be females and older adults. From the results respondents/consumers perceived nutrition information as very important, especially how it helped them to compare nutritional quality of products, and provided important information about the food products.

The different times that consumers read food labels were investigated and it was observed that the majority 57% of the respondents' (n=342) in this study read nutrition information on food labels when they picked up food products from the shelves while 20% (n=121) did not. Results did not indicate any significant effect for age and gender because both age and gender did not influence the specific time or when respondents chose to read nutrition information on food products. These findings were, however, found to be contrary to that reported in a similar study conducted earlier in the same Ho Municipality. In this study, the authors found 47.8% (n=325) of the male respondents and about 51.0% (n=371) of the female respondents to have read food labels of products they purchased. Subsequently, food label reading prior to food product purchase was higher among consumers 30 years and below and for females than males. In the present study, results also indicated that awareness of nutrition information and reading of food labels did not significantly differ according to gender and age. However, once consumers became aware of food labels, using the nutrition information from the labels varied between males and females, as well as across the different age groups.

### **6.1. Consumers label awareness and reading**

Results also indicated that almost 90% (n=540) of the respondents were familiar with or aware of food labels on food products. A similar study in the Eastern region of Ghana, Darkwa (2014) also reported high awareness level among consumers with more than three quarters aware of food labels and the related nutrition information labels provided. Themba and Tanjo (2013) in a similar study in Botswana reported that 78% of the respondents were aware of food labels and the related nutritional information provided by the labels. The high awareness and knowledge levels of food labels among respondents in the present study was confirmed by the 82% who stated that they read food labels prior to purchasing food products although less than half that number (31%, n=150) was observed actually reading food labels in store prior to purchasing any food item. This trend had been observed earlier in some other studies for example Darkwa<sup>10</sup> in a similar study in Koforidua Municipality,

Ghana, reported that 65% of the study respondents mentioned that they read food labels prior to purchasing food products whilst 24% ignored the labels and 11% examined labels in detail before placing food products in their shopping baskets. On the contrary, these numbers did not tally with that observed in store implying there was over reporting of label reading among consumers.

Other similar studies have revealed that actual label use is usually much less than what is self reported as used, and that consumers are often confused by the information on the food label and have difficulty understanding serving sizes (Cowburn & Stockley, 2005; Mhurchu & Gorton 2007; Malam et al., 2009; Grunert et al., 2010a; Fernández-Celemín et al., 2010b). For example, label recognition in Korea is very low, considered unnecessary and not often trusted (Kim and Kim, 2009). Additionally, Māori and Pacific consumers rarely use food labels to inform their food choices (Lanumata et al., 2008). Both Wiles et al. (2009) and Bialkova and Van Trijp (2010) noted that a minority of consumers look at nutrition labels when shopping. Even for the few who look at food labels prior to purchasing food products may not necessarily read and process what they read. In relation to this, Cowburn and Stockley (2005) explained that even if consumers report using labels, they may in fact simply look at the nutrition information panel but not process the information further.

Motivation and understanding are said to be important when it comes to behaviour but some studies have reported that motivation and understanding alone are not sufficient to result in behaviour (Grunert et al., 2013). Wiles et al. (2009) reported that literature on consumer behaviour indicated that countless factors did influence consumers when they purchased goods and services. In a study of South African consumers, Wiles et al., (2009) concluded that nutritional information provided in food labels influenced consumers to purchase selected foods. Similarly, Mahgoub et al. (2007) found 63% of consumers studied in Lesotho claimed that they obtained knowledge on the nutritional content of food from reading labels and that guided them to select food products. According to Drichoutis et al. (2006), there is empirical evidence that indicates that consumer purchase behaviour is affected by the nutritional information and health claims provided in food labels. They further highlighted marketers' frequent use of health claims and nutritional information to encourage consumers to switch brands. They particularly observed that nutritional information affected purchasing behaviour mainly because consumers avoided the negative nutrients in food products. They also added that nutritional information influenced consumer evaluation and perception of products.

## 6.2. Reasons given by consumers for reading food labels

Food product comparison (23%) and curiosity (30%) were identified as the two main reasons consumers read food labels prior to purchasing. Lesser reasons given included nutrition counseling advice (19%) and meeting special dietary needs (18%). Though product comparison has been reported in previous similar studies as an important reason for reading and using food labels, <sup>13</sup>meeting special dietary needs ranked highest with 57%<sup>13</sup> followed by curiosity 34%, family members habit 30%, product comparison 29%, and nutrition counseling advice 25%. On the contrary, consumers in the current study did not report any special dietary needs that needed to be met, explaining probably why they did not find health as an important factor that could influence their reading of food labels. Although results in this study suggest that consumers did not report any special dietary need as a basis for reading and using food label information to make food choices, it's important to encourage consumers to do that to help promote healthy dietary practices and facilitate wellness among consumers. This could help control the incidence of chronic diseases such as hypertension and diabetes as well as their management.

Looking at the reasons consumers in this study gave for reading food labels, it is easily anticipated that some of the benefits of reading food labels may never be realized. Jensen (2011) highlighted the need for consumers to read food labels so they could easily substitute less healthy foods with healthier ones. Others have also suggested that continuous purchase of the same food products tends to become habitual lowering involvement in purchase decisions (Adamowicz and Swait, 2011). Grunert and Wills (2007) also found that consumers tend to be less interested in reading food labels

for fresh food products like vegetables, fruit and meat but rather more interested in reading labels on processed foods.

## 7. CONCLUSION

From the findings it can be concluded that although several consumers mentioned that they read food label information, most did not necessarily do so (over reporting) and so the choices they made while shopping were often dependent on other factors such as price and curiosity among others rather than the food label information. Also the study suggests that since the high label reading claimed by consumers did not necessarily take place, the health benefits of reading and using food label information expected does not happen and thus the continuous rise in the incidence of chronic diseases among Ghanaians. Findings indicate that the food choices of the majority of respondents who read food labels are not necessarily influenced by the information on the food label, although respondents' understanding of the information revealed an inability to apply food label information to make food choices. The results also indicate that nutrition information awareness and reading do not significantly differ according to gender and age. On the other hand the results show that usage of nutrition information does vary according to gender and age of the respondents and this finding is consistent with previous studies.

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