

**AWARENESS AND USE OF NUTRITION LABELS ON
PRE-PACKAGED FOODS AMONG CONSUMERS IN ACCRA**

BY

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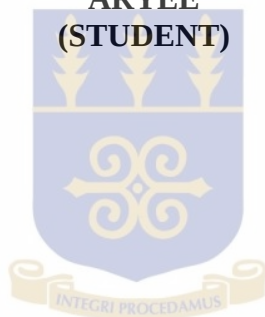
**THIS THESIS IS SUBMITTED TO THE DEPARTMENT OF
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DECLARATION

This is to certify that this thesis is the result of research undertaken by Aryee, Aba Gloria towards the award of the MPhil Nutrition Degree in the Department of Nutrition and Food Science, University of Ghana, under the supervision of Dr. Esi K. Colecraft and Prof. E. Asibey-Berko of the Department of Nutrition and Food Science. All references cited have been duly acknowledged.

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ABSTRACT

Introduction and Objective: Nutrition labels may help consumers to make healthier choices when choosing prepackaged foods and thereby reduce the risk for diet-related chronic diseases. Ghanaian consumers are increasingly consuming prepackaged foods, however there is little research on their awareness and use of nutrition labels. The study assessed awareness and use of Nutrition labels on prepackaged foods among shoppers in two selected supermarkets in the Accra Metropolis in Ghana. This will facilitate future public education efforts to promote the use of Nutrition labels.

Design and Methods: This was a cross-sectional survey with 403 adult shoppers at the two supermarkets. Convenient sampling was used to recruit participants into the study. Structured pre-coded questionnaires were used to interview participants on socio demographic, health characteristics and awareness and use of food and nutrition labels.

Statistical Analysis: The Chi square (χ^2) statistic was used to assess differences between those having high and low awareness of nutrition labels and between those who use nutrition labels and those who do not. Logistic regression was used to determine factors which predicted awareness and use of nutrition labels.

Results: Majority (82%) of respondents were aware that some prepackaged foods carried food labels with nutrition information. The components of food labels which were most likely to be used were the expiration date (26.9%) and nutrition label information (19.6%). About 25% of the respondents reported not using nutrition labels. Among those who used nutrition labels, nutrient information most likely to be used were fats (16.4%) and sugar (16.1%) and cholesterol (14%). There were no associations between history of health conditions and special diet status of participants and nutrition label awareness and use. Among the socio demographic factors education and income were found to be positively

associated with awareness of nutrition labels. Education, employment status, income and marital status were positively associated with nutrition label use. Level of education was the only significant predictor of nutrition label awareness in this study. No significant predictors of nutrition label use were observed. Compared to respondents who had completed Diploma, Degree or Post graduate education, respondents who were less likely to be aware of nutrition labels were those with Primary/Middle/JHS education or less (OR= 0.2;CI= 95%; P = 0.002) and those with SHS/Vocational/Technical education (OR=0.3;CI=95%; P=0.001). Respondents with $\leq$ Middle school education were 80% less likely to have high awareness and those with SHS/Vocational/Technical school education were 70% less likely to have high awareness compared to individuals with Diploma and beyond.

Conclusion: In summary, the study found that educational level plays a significant role in consumers' awareness of nutrition labels. There is the need to improve awareness of nutrition labels among the lower educated and encourage consumers who don't use nutrition labels to do so when purchasing prepackaged foods. Consumers who have diet-related health conditions and those who want to lose weight should be encouraged to use nutrition label information to choose healthier prepackaged foods as part of dietary and weight management efforts. The results of this study provide useful information that can inform future public education efforts to promote use of nutrition labels for sound food choices.

DEDICATION

Praise the Lord, for He is good

I dedicate this thesis to my dear family Mr. and Mrs. Yawson, Ebenezer, Eugene, Calvin,
Naa, Jake, Frances, Ato, Kukua, Fiifi.



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LIST OF ACRONYMS AND ABBREVIATIONS

BMI	Body Mass Index
CAC	Codex Alimentarius Commission
DRV	Daily recommended values
DV	Daily values
EU	European Union
FAO	Food and Agricultural Organization
FDA	Food and Drugs Administration
GDA	Guideline daily amounts
JHS	Junior High School
NFP	Nutrition facts panel
NHANES	National Health and Nutrition Examination Survey
NIP	Nutrition information panel
NLEA	Nutrition Labelling and Education Act
MSG	Monosodium glutamate
PDV	Percentage daily value
SHS	Senior High School
UAE	United Arab Emirates
USA/US	United States of America
WHO	World Health Organization

CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND STATEMENT

Nutrition label information which is a component of a food label is an attempt to provide consumers, at the point of purchase, with information about the nutritional content of individual food products, in order to enable consumers to choose nutritionally appropriate food (Grunert and Wills, 2007). It provides information about the number of kilocalories and the amount of carbohydrates, fat, sugar, protein and certain other nutrients in a food (Williams and Caliendo, 1994).

Studies have observed that increasing diet related diseases are linked to high consumption of prepackaged foods and inadequate awareness about nutrition labels (Washi, 2012). Most prepackaged foods are laden with high sugar and high fat whereas consumers are ill-informed on the use of nutrition labels (Kim *et al.*, 2001b; Young and Nestle, 2002; Davey, 2004 and Washi, 2012).

A number of studies have investigated consumers' use of nutrition label information on prepackaged foods and found it to have positive effects on the quality of consumer's diets (Nayga, 1999; Kim *et al.*, 2000; 2001b). For instance nutritional label use reduced individuals' intake of total energy from total fat, sugars and saturated fat, cholesterol and sodium and tended to increase intakes of fibre, iron and vitamin C (Neuhouser *et al.*, 1999; Ollberding *et al.*, 2010).

The nutrition label has emerged as a prominent policy tool for promoting healthy eating in some countries (Cowburn and Stockley, 2005; Campos *et al.*, 2011). In US and Canada nutrition labeling is mandatory largely because of their population drift toward healthy and

wellness foods and also reflect a response to consumers' right to know the content and nutrition of a food product (Abbott, 1997; Campos *et al.*, 2011).

1.2 STUDY RATIONALE

Nutrition labels on prepackaged foods have been shown to help consumers make healthful food choices. Rapid developments in global supermarkets have brought a plethora of new pre-packaged foods to the shelves of markets in developing nations (Kasapila and Shawa, 2011). Similarly the Ghanaian market has been flooded with imported and locally produced prepackaged foods over the past few years and increasingly Ghanaian consumers are using prepackaged foods.

The usefulness of nutrition labels in helping consumers make healthful food choices will depend on the extent to which consumers are aware of them and use them. There is however limited information on Ghanaian consumers' awareness and use of nutrition labels on prepackaged foods. Given that diet related chronic diseases are increasing in Ghana nutrition labeling may be an important strategy to promote healthful dietary choices to reduce risk for diet-related chronic diseases. This study will explore on awareness and use of nutrition labels among Ghanaian consumers so as to promote use of nutrition labels for improved food choices.

1.3 OBJECTIVES

1.3.1 Overall Objective

The overall objective of the study was to assess the awareness and use of nutrition labels on prepackaged foods among shoppers in two selected supermarkets in the Accra Metropolis.

1.3.2 Specific Objectives

Specific objectives were to:

1. Assess whether or not shoppers at selected supermarkets in Accra are aware of the presence of nutrition labels on food labels of prepackaged foods.
2. Assess the components of food labels and the components of nutrition labels on prepackaged food products that shoppers are most likely to use.
3. Determine factors that are associated with shoppers' awareness and use of nutrition labels on prepackaged foods.

CHAPTER TWO

1.0 LITERATURE REVIEW

2.1 TRENDS IN AVAILABILITY AND USE OF PREPACKAGED FOODS

Prepackaged foods are foods that are enclosed or wrapped in containers like paper, plastic, glass etc and are most often heated treated, irradiated or have natural or artificial preservatives added to prolong their shelf lives. They are normally packaged for the purposes of handling, transporting, preserving, optimizing product presentation, and hygiene and to facilitate product dispensing and use by the consumer (Dictionary of Food Science and Technology, 2005). Additionally prepackaged foods serve as a means of reducing post harvest losses and facilitate the transport of foods from one geographical location to another (FAO, 2011).

Adaptations to modern fast paced lifestyle led to increased commercialization of processed prepackaged food products to keep up with peoples' demand for convenience and variety (Alvarez and Boye, 2012). The result is now prepackaged foods are more affordable and easily accessible (Davey, 2004) especially in the developing world (Kasapila and Shawa, 2011) and may support declining household food production in food insecure areas (Mahgoub *et al.*, 2007).

Recent observations made by French *et al.* (2001) and French (2003) in the US suggest that the sizes of prepackaged foods for individual consumption has increased. In the earliest part of the 20th century Coca-Cola carbonated soft drink for individual consumption was sold in 6.5 ounce bottles but currently it is being sold in 20 or 32 ounce bottles (Pendergrast, 2000; French, 2003; Davey, 2004). Candy bars and potato chips have increased from 1 ounce to 2 and 3 ounce single-serving packages (Young and Nestle, 1995; French, 2003). Supersize chocolate bars and packets of crisps are being marketed making costing less for a given

amount (Davey, 2004). The abundance and increases in package sizes of prepackaged foods such as those laden with high sugar, high fat and high sodium coupled with their affordability provide opportunity for excess consumption, whereas consumers are ill-informed on the use of nutrition labels. The result is the escalation in diet related health problems especially obesity (Kim *et al.*, 2001b; Young and Nestle, 2002; Davey, 2004 and Washi, 2012).

2.2 FOOD LABEL ON PREPACKAGED FOOD

A food label may be described as any tag, brand, mark, pictorial or other descriptive matter attached to a container of food (Codex,1985).The information required to be present on a food label according to food labeling standards include the name or description of the food, ingredient list, quantitative ingredients declaration also called percentage labeling ,information on food additives, potential allergens, net contents and drained weight, name and address of the manufacturer ,the country of origin, lot identification or food recall information also called code dating, date markings such as the manufacture date, expiration or best before date, storage instructions, directions for use and nutrition information (Codex, 1985).

2.3 NUTRITION LABEL ON PREPACKAGED FOODS

A nutrition label is a component of food labeling information on prepackaged foods. It primarily provides consumers with information on the nutritional content of food products (Grunert and Wills, 2007). The nutritional information may be presented in either numeric or non-numeric formats. Numeric formats present nutrition information quantitatively and non-numeric formats convey information in written form or graphically such as logos, symbols and colour coding (Cowburn and Stockley, 2005; Maubach, 2010). The Nutrition Facts Panel (NFP) or Nutrition Information Panel (NIP) provides quantitative information on the energy and nutrient content of the food in 3 ways: 1) per serving basis; 2) per 100g (or 100ml if

liquid), 3) and as Percentage Daily Value (PDV) and this is usually based on recommendations for an average person requiring 2000 Kcal per day (Maubach 2010).

The nutrition label is regarded as an important component of food labels because it guides consumers to select better and healthy food choices for themselves and their families (Charlton *et al.*, 2004; Jones and Richardson, 2007) and also enables them compare the nutritional values of similar food products in order to make healthier informed food choices (Al Tamimi *et al.*, 2004).

2.4 HISTORY AND LAWS REGULATING NUTRITION LABELS

The nutrition label originated as a requirement of food labels. At the beginning of the nineteenth century international food laws were instituted to ensure safe and quality foods to safeguard consumer health as a result of prevailing problems of adulteration, falsification of foods, the presence of chemical, biological and physical hazards in foods and unhygienic handling of foods which were beginning to result in public health problems (Lasztity *et al.*, 2004). Another motivation for the institution of food labels was to satisfy consumers demand to be provided with adequate information about the characteristics of a food product such as nutrition information (Lasztity *et al.*, 2004).

Provision of food labels on prepackaged foods is mandatory. However provision of nutritional content information may or may not be mandatory in a country depending on the provisions of the legislative instrument or legal requirements governing food labeling (Campos *et al.*, 2011). In some countries nutrition labeling is mandatory largely because of their population drift toward healthy and wellness foods and also reflect a response to consumers' right to know the content and nutrition of a food product. Such laws require detailed, accurate and accessible nutritional content information on the packaged foods (Abbott, 1997).

In the United States of America (US) the Nutrition Labeling and Education Act of 1990 (NLEA) makes the display of nutritional content information on pre-packaged foods mandatory with exception of foods intended for immediate consumption (FDA, 1994). The NLEA was enacted for the following purposes 1) to help consumers make healthier food choices through improved access to nutrition content information, 2) to protect consumers from inaccurate or misleading health-related claims on food packages, and 3) to encourage manufacturers to improve the nutritional quality of their food products by making nutrition content visible (Mayer *et al.*, 1998). Nutrition labeling of prepackaged food is also mandatory in Australia, New Zealand and Canada (Cowburn and Stockley, 2005). In Canada, law on mandatory nutrition labeling was first passed on in December 2005 and became mandatory on virtually all pre-packaged foods in 2007 (Health Canada, 2010).

Mandatory regulations are under development in Europe (The Council of European Communities, 1990) but currently (2013) European Union (EU) countries still maintain the voluntary system of nutrition labeling except for special categories of foods such as dietary supplements and when nutritional and health claims are made for fortified, enriched or otherwise modified foods such as those low in fat. Countries which maintain the voluntary system may do so for a number of reasons. It is widely believed that its introduction could affect businesses especially smaller ones in terms of bearing the financial cost. The voluntary use of nutrition label by some countries is also supported with the argument that it rarely influences purchasing decisions. Moreover studies point to the fact that some consumers had difficulty in comprehending nutrition facts, particularly technical and quantitative information (Patten *et al.*, 1994).

Ghana being a member country of the Codex Alimentarius Commission has adopted the voluntary guidelines for regulating nutrition labeling (FAO, 2009a: 2009b). Under Codex Alimentarius guidelines, nutrition labeling is voluntary for all foods except in the case where

a nutrition or a health claim is made. Ghana, by maintaining a voluntary status on nutrition labeling, permits the importation and local production of prepackaged foods which do not bear nutrition labeling. As a result, some prepackaged foods in Ghana do not bear nutrition labels and consequently deny consumers the opportunity to discriminate between different products on the basis of their nutrition contents.

2.5 BENEFITS OF USING THE NUTRITION LABEL

To lessen the morbidity and mortality associated with chronic diseases, populations need to modify dietary habits. A significant proportion of the world's populations especially in developing countries are suffering from a spectrum of coronary artery and cardiovascular diseases and diabetes, the most prevalent chronic diseases (Weisburger, 2002; Sanders, 2003). Given the huge financial cost of these diseases through untimely deaths, disability, or lost worker productivity, improving the dietary habits of populations are urgently warranted. One of the primary mechanisms used to assist the population in making healthier dietary choices that would ultimately have a positive effect on public health is the nutrition label (Cowburn and Stockley, 2005 ; Campos *et al.*, 2011).

2.5.1 NUTRITION LABELS USE AND HEALTHY DIETARY INTAKE AND LIFESTYLE BEHAVIOR

Several studies have investigated the relation between the use of nutrition label information, health status, and related behaviors. For example, Kristal *et al.* (1998), Neuhouser *et al.* (1999) and Nayga (1999) concluded that consumers who reported that they used nutrition label information consumed less dietary fat than those who did not. Kim *et al.* (2000; 2001b) studies discovered that nutritional label use reduced individuals' intake of total energy from total fat and saturated fat, cholesterol and sodium and tended to increase intakes of fibre. They reported that respondents who used total fat information decreased the average daily

intake of energy from total fat by 6.9% and those who read information on fibre increased average daily fibre intake by 7.51grams.

Neuhouser *et al.* (1999) found that nutrition label users are more likely to have reduced sodium, fat, cholesterol and energy intakes coupled with increased fibre, iron and vitamin C intakes than non-users. Ollberding *et al.* (2010) study concluded that consumers who used nutrition facts panel reported lower values for intake of total energy, total fat, saturated fat, and sugars than those who did not. De Magistrisi *et al.* (2010) also concluded that individuals who utilized nutritional labels more often reported a lower intake of salt and avoided high fat intake than those who rarely used it.

Guthrie *et al.* (1995) and McLean-Meynsse (2001) studies discovered that nutrition label use was associated with consumption of diets that were higher in vitamin C and lower in cholesterol. Likewise Huang *et al.* (2004) found that the total percentage of energy intake from fat was associated with reading nutrition labels. A number of studies have investigated how reading nutrition label influence or affect consumers' behaviour. For example, Satia *et al.* (2005) and Kempen *et al.* (2012) found that people who read nutrition labels more often improved their nutrition knowledge and were health conscious and maintained a healthy dietary and lifestyle behavior such as eating fresh fruit and vegetables, cutting down on alcohol and exercising regularly than those who do so less often. Also De Magistrisi *et al.* (2010) reported that individuals who utilized nutritional labels more often avoided snacking.

2.5.2 NUTRITION INFORMATION AND DIETARY MANAGEMENT OF CHRONIC DISEASES

The use of nutrition labels and adherence to dietary recommendations are important for chronic disease populations. A study by Post *et al.* (2010) on the use of the nutrition facts label in chronic disease management revealed that patients who had type 2 diabetes, hypertension, hyperlipidemia, or any combination of these three diseases read nutrition labels

more than patients without any of these diseases. Furthermore those patients with chronic diseases who had been advised by a doctor or health professional to reduce intake of calories and reduce weight were more likely to use nutrition labels than those patients who had not been advised to do so. Their study found that patients who used nutrition labels consumed less energy, saturated fat, carbohydrates, and sugar, and more fibre than those who did not. Lewis *et al.* (2009) study on food label use and awareness of nutritional information and recommendations among persons with chronic disease also showed that persons with chronic diseases checked and used nutritional label information more than did participants who reported no such diseases. Kreuter *et al.* (1997) found that patients in Southeastern Missouri with hypertension or elevated blood cholesterol were more likely to look for sodium and fat information respectively. They found that patients who ate a diet low in total fat were much more likely than those who ate a diet high in total fat to report looking for fat information on nutrition labels. Satia *et al.* (2005) study reported that obese participants who were trying to lose weight were three times more likely to use nutrition label information on serving size, total energy, energy from fat, grams of fat, and cholesterol than those who were not. Contrary to the aforementioned reports Guthrie *et al.* (1995) did not find a significant relationship between nutrition label use and history of chronic disease.

2.6 FACTORS ASSOCIATED WITH AWARENESS AND USE OF NUTRITION LABELS

Nutrition labels awareness and use have been found to be associated with (i) socio demographic factors such as age, sex ,education, (ii) health related factors such as health status, special diet status, diet health awareness and diet importance, body mass index (BMI) status and (iii) other factors such nutrition knowledge, time spent at grocery store, product characteristics such as price, taste, nutrition(Nayga , 1996; Drichoutis *et al.*, 2005; Loureiro *et al.*, 2006; Mahgoub *et al.*, 2007;Wiles *et al.*, 2009; Kasapila and Shawa, 2011).

2.6.1 SOCIO-DEMOGRAPHIC FACTORS ASSOCIATED WITH AWARENESS AND USE OF NUTRITION LABELS

Factors such as gender, age, ethnicity, area of residence, urbanization, education, employment status, marital status, household size, household composition have been associated with awareness and use of the nutrition label.

2.6.1.1 Gender

The socially constructed roles of men and women interact with their biological roles to affect nutrition label use among both sexes. A number of authors have reported gender differences in the use of nutrition labels. Majority of the studies have found that women in general are more likely to use nutrition labels than men (Nayga, 1999; Kim *et al.*, 2001a; Prathiraja and Ariyawardana, 2003; Worsley, 2003; Satia *et al.*, 2005). The primary gender roles of women in the selection and production of food tend to make them better informed about health knowledge than men even though the roles of women have been redefined over the years. This according to Prathiraja and Ariyawardana, (2003) is because of women's natural interest in providing safe and wholesome food for their families.

Nayga's (1996) study found that males are less likely than females to use nutrition label information on calories per serving, cholesterol content, fat content, sugar content, vitamin content, sodium content, fibre content, health statements and list of ingredients. This has been confirmed by Loureiro *et al.* (2006) who reported that men attach less importance to nutrition labels provided that their households were in good health. They reported that often than not males are more likely to purchase food only for themselves and likely to purchase only a few items at a time rather than do the large weekly shopping. Some studies have been able to establish that men on the average consume higher fat and cholesterol compared to women because men usually do not pay attention to nutrition labels (Frazao and Cleveland, 1994;

Nayga and Capps, 1994). In contrast Aboulnasr (2010) observed that males reported greater usage and importance of the nutrition label compared to females probably because the study found that disease risk perceptions was higher among men than females.

Fewer studies found no associations between male and female participants' use of nutrition labels probably because men as well as women are increasingly becoming aware of diet and health (Burton *et al.*, 1999; Nayga, 2000; Peters-Teixeira and Badrie, 2005).

2.6.1.2 Age

The relationship between age and use of nutrition labels has been recognized. For example, studies by Reid *et al.* (1996), Wandel (1997), Loureiro *et al.* (2006), Mannell *et al.* (2006) found that middle aged or younger adults were more likely to use nutrition labels than older individuals. This evidence was supported by Burton and Andrews (1996) study which concluded that older people perceived nutrition information as less understandable and tended to read only the ingredient list, while younger people were inclined to read both the nutritional labels and ingredient lists, or just the nutritional labels.

In contrast several studies have found that as age increased the likelihood of using nutritional labels also increased (Drichoutis *et al.*, 2005; Satia *et al.*, 2005; Misra, 2007). For instance, McLean-Meyinsse and Summers (2008) discovered that nutrition label use was lower among 18-25 years and 26-40 years age groups than older consumers. Nayga (1996), Lin and Lee (2003) and Drichoutis *et al.* (2005) reported specifically that as one aged there was a strong probability of using information about fat content, cholesterol content, and health benefits. On the other hand, Drichoutis *et al.* (2005) observed that older respondents engaged in nutritional information search because they may have more restricted diets recommended by their medical advisers due to health problems such as hypertension and high cholesterol. Older people may also be more informed about nutrition due to past experience. Lytle *et al.*

(1997) study among US children in grades 3 to 6 revealed that majority had difficulty using nutrition labels and could not categorize healthy foods on the basis of label. Findings from studies by James *et al.* (1997) and Hawthorne *et al.* (2006) also noted that the use of nutritional labels was low among adolescents.

Klopp and McDonald (1981), Guthrie *et al.* (1995) and Bender and Derby (1992) studies did not show that nutrition label use increased with increased age. This may be because Gould and Lin (1994) reported that presently younger people are more easily exposed to health related information.

2.6.1.3 Education

A large number of studies have found that education is an important factor affecting use of nutrition labels. In particular, individuals with higher education were more likely to be aware and were more likely to use nutrition labels than the lower educated (Guthrie *et al.*, 1995; Schupp *et al.*, 1998; Neuhouser *et al.*, 1999; Kim *et al.*, 2001a; Drichoutis *et al.*, 2005; Wiles *et al.*, 2009). Schupp *et al.*, (1998) observed respondents who had high school or higher education were more aware of nutrition labels than respondents who had lower education. The relationship between the awareness and use of nutritional labels and level of education has also been analysed by Kumar and Pandit (2008). They observed that people with graduate, postgraduate or doctorate degrees were more aware of and pay significantly greater attention to food label information including nutrition information while purchasing processed or packaged food items as compared to respondents who had lesser education. This is probably because higher educated consumers are likely to read scientific, academic articles or prints and are more likely to be exposed to health and nutrition related news sources, thus increasing their awareness of diet-health relationship (Nayga, 1996; Loureiro *et al.*, 2006). Similarly higher education levels may also enhance one's ability to comprehend and interpret labels (Guthrie *et al.*, 1995; Drichoutis *et al.*, 2005).

2.6.1.4 Income

Studies have shown a relationship between the use of nutrition label and consumers income (Nayga ,1996;Kim *et al.*, 2001a; McLean-Meyinsse, 2001; Drichoutis *et al.*, 2005;Mahgoub *et al.*, 2007;Wiles *et al.*, 2009). Some studies have reported a positive relationship between income and nutrition label use whereas others have reported a negative relationship.

For instance Nayga (1996) reported that main meal planners of higher-income households are more likely to use nutritional label information on food packages, specifically concerning calories, sodium, fibre, fat, and cholesterol content than main meal planners of lower-income households. Mahgoub *et al.*, (2007) also found that that nutrition label information was a major factor in respondents food purchasing decisions except for respondents earning a family income of less than M1000(1000 maloti) per month for whom food price was the major determining factor of the foods they buy. The relationship between income and level of education is evident as Loureiro *et al.*,(2006) observed that higher income households in Zaragoza in Spain earning €1500(1500 Euro) or more per month were likely to show more responsibility for their health since they were more likely to have a higher educational background.

Contrary findings have been reported by Schupp *et al.* (1998) where they observed that respondents of households with higher family incomes of \$60,000(60,000 US dollars) and higher were less likely to read nutrition labels. Schupp *et al.* (1998) explained that higher income earners in Louisiana in the US were less likely to read nutrition labels probably because they worked more hours and therefore may devote less time to shopping. The study further reported that higher income earners may also eat outside home more frequently and may not be concerned with the nutritional content of meals prepared at home. Similarly Drichoutis *et al.* (2005) results showed a statistically significant and negative relationship

between high household income of more than €20,000 (20,000 Euros) and use of nutrition labels among households in Greece.

2.6.1.5 Employment Status

Research findings have discovered an association between nutrition label use and employment status, however conclusions about employment status and nutrition label use vary. Some studies have concluded that use of nutrition label is negatively associated with employment status whereas other studies have shown a positive relationship between employment status and use of specific nutrients indicated on the nutrition labels (Guthrie *et al.*, 1995; Nayga, 1996; Schupp *et al.*, 1998; Drichoutis *et al.*, 2005). Schupp *et al.* (1998) showed that retired household heads were more likely to use nutrition labels than the employed. They further explained that retired persons may have ample time to focus on issues pertaining to their health. Guthrie *et al.* (1995) also reported that unemployed homemakers were more likely than the employed to read nutrition labels since they lay more emphasis on meal preparation.

On the other hand Drichoutis *et al.* (2005) concluded that people who are employed are more likely to use nutrition labels more especially when it comes to specific nutrient use such as vitamin and mineral information but were less interested in using cholesterol. However they concluded that information on cholesterol was more likely to be used by older unemployed respondents probably because they are more likely to have health issues. Nayga (1996) also found a negative relation between employment and use of sodium information. This study concluded that employed main meal planners in the US are less likely to use nutritional information concerning sodium content than their unemployed counterparts probably because many employed main meal planners are too busy and have generally less time to look at nutritional information regarding sodium when grocery shopping compared to unemployed main meal planners. Drichoutis *et al.* (2005) reported that employment status appears to

affect usage of different nutrient types in different ways though the reasons for the different directions of effect are not clear.

2.6.1.6 Ethnicity/race

Obesity is, now than ever before, a serious health threat, particularly among racial/ethnic minorities. Hence several studies have investigated the association between race/ethnicity and nutrition label use. Nayga (1996) observed that whites in the US were more likely to use nutrition label information especially concerning fat content on food packages than non-whites. Kim *et al.* (2000) study observed that whites used nutrition label information on calories and cholesterol than did blacks therefore blacks consumed about 1% more calories from total fat, and 42 milligrams more cholesterol per day than whites.

This was probably because, non whites may have been less aware of the importance of good nutrition to their health and therefore were less likely to use nutritional information when shopping. Kim *et al.* (2000) also observed that Non- Hispanics were less likely to use nutrient content information on dietary fibre and sodium than Hispanics. Label users who were non-Hispanics consumed about 250 milligram more sodium per day than label users who are Hispanics. Shcupp *et al.* (1998) study however indicated that race did not determine nutritional label use on fresh packaged meats among Louisiana households.

2.6.1.7 Area of residence

Studies have shown contrasting results on the relationship between nutrition label use and area of residence. Kim *et al.* (2000) results showed that individuals who resided in non-metropolitan areas were less likely to use nutrition labels than those who resided in suburban areas. On the contrary, Nayga (1996) observed that residents in non-metropolitan areas were more likely to use nutritional information on sodium, vitamins and minerals and fibre content of food packages than residents in suburban and urban areas.

This finding did not support the hypothesis that people residing in the city or suburban areas would be more likely to use nutrition labels because of more exposure to nutrition information from various media compared to those residing in non-metropolitan areas (Nayga, 1996). However this may be explained by the slower lifestyle of residents in non-metropolitan areas which may allow them to have more time to shop and more time to examine nutritional information than do residents in urban areas (Nayga, 1996).

2.6.1.8 Household size, household composition and marital status

Household composition has been known to affect nutrition label usage (McArthur *et al.*, 2001; McLean-Meynsse, 2001) and married consumers with children are more likely to search for nutrition label information especially since the health of children is a primary concern of a household. Schupp *et al.* (1998) observed that nutrition label use is lower among individuals who are single or married without children, since they have responsibility only for their well-being.

A considerable number of studies have concluded that larger households of four or more are likely to use nutrition labels in food purchases compared to smaller households of one or two people and individuals who live alone (Guthrie *et al.*, 1995 ; Nayga,1996 ; Schupp *et al.*,1998; Wiles *et al.*, 2009). Main food shoppers for larger households spend extra time and effort searching for nutrition label information because it has an influence not on their dietary intake alone but that of other household members as well (Guthrie *et al.*, 1995; Wang *et al.*, 1995; Nayga,1996)

On the contrary a few studies found that larger households attached less importance to nutrition labels (Govindasamy and Italia ,1999 ; Prathiraja and Ariyawardana,2003). Govindasamy and Italia (1999) showed that as the household size increases the importance of nutritional labels decreases significantly probably because of the burden of heavy

expenditures for daily needs and wants therefore they focus on price for economic reasons. This confirms the findings of Prathiraja and Ariyawardana (2003) study which indicated that respondents from larger households were willing to pay less for nutritional labeling than smaller households. Another reason why larger households may attach less importance to nutrition labels is that they are more likely to have larger shopping lists and may grow tired of looking at nutrition labels (Berning *et al.*, 2009).

2.6.2 HEALTH-RELATED FACTORS ASSOCIATED WITH AWARENESS AND USE OF NUTRITION LABELS

2.6.2.1 Perception about diet-health

Studies have found associations between consumers' perceptions about diet and health and awareness and use of nutrition information (Kim *et al.*, 2000; Lin and Lee 2003; Drichoutis *et al.*, 2005).

Kim *et al.* (2000) observed that consumers who perceived diet as important to their lifestyle were more likely to use nutrition information than those who perceived otherwise. Their study found that diet-health importance was negatively related to saturated fat intake and positively related to fibre intake. Lin and Lee (2003) study suggested that consumers who thought it was important to eat a healthy diet were more likely to watch how much fat they consumed and to look for fat information when selecting packaged foods than those who cared little about the healthfulness of their diet. Drichoutis *et al.*, (2005) studies reported that consumers with a special interest or positive attitude to diet and health were more likely to report higher levels of nutrition label reading.

According to Drichoutis *et al.*, (2005), the more a consumer feels that his health is likely to suffer in the future the greater the perceived health risk. Placing importance on following dietary guidelines or healthy dietary practices positively affects nutritional label use. For

example Lin and Lee (2003) stated that the higher the probability an individual thinks she may suffer heart disease because of eating too much fat, the more likely she is motivated to use nutrition labels to identify foods with lower fat content, and to consume less fat.

2.6.2.2 Diet-related chronic diseases and special diet status

Many individuals are on special diets for medical, personal or other reasons. Studies have observed a relationship between diet-related chronic diseases, special diet status and use of nutrition labels. Their studies suggest that consumers who have diet related chronic diseases and/or may be on a special diet may be more likely to use nutrition labels in making prepackaged food purchasing decisions than those who do not have a diet related condition and/or are not on special diet (Schupp *et al.*,1998; Kim *et al.*, 2000; Kim, *et al.*, 2001b; Lin and Lee 2003; Prathiraja and Ariyawardana , 2003; Drichoutis *et al.*, 2005 ; Loureiro *et al.*, 2006; Bayar 2009; Lewis *et al.*,2009; Post *et al.*,2010).

Lewis *et al.* (2009) and Bayar (2009) observed that nutrition awareness and nutritional label use were higher among people with chronic diseases such as hypertension, hypercholesterolemia, diabetes, overweight and heart disease as compared to those without these chronic disease . Loureiro *et al.* (2006) study to assess consumers evaluation of nutrition labels indicated that individuals who had diet related problems valued nutrition information more than those who had none.

Post *et al.* (2010) study revealed a keen interest in nutritional information use among American patients who had type 2 diabetes, hypertension, and/or hyperlipidemia and had been advised to change their eating habits. These patients were found to read nutrition labels and thus consumed less energy, saturated fat, carbohydrates, and sugar, and more fibre than patients who had not been put on a special diet. Kim *et al.* (2000) found that individuals who were on a special diet were more likely to use information on five nutrient contents namely

total fat, saturated fat, cholesterol ,fibre and sodium than those who were not on special diet. Likewise Lin and Lee (2003) study indicated that respondents on a vegetarian and a reduced-fat diet used nutritional information more than those who were not on special diet. The study indicated that intake of calories from total fat was 2.22 and 4.36 percentage points lower among respondents on a vegetarian and a reduced-fat diet respectively as compared to those who were not on special diets.

The reason for the above study findings may probably be because being on a special diet requires individuals to check the nutrient content of the foods they eat (Drichoutis *et al.*, 2005). Prathiraja and Ariyawardana, (2003) also indicated that consumers who have diet related health problems may value nutrition labels than those who have none because of the need to make healthier dietary choices to control their conditions.

2.6.2.3 Overweight and obesity

Some research findings have established a relationship between weight status and nutrition information use (Kim *et al.*,2000; Bayar, 2009).

Kim *et al.* (2000) showed that BMI (body mass index) positively influences nutritional label usage especially fat intake. Bayar (2009) observed that being obese has a positive impact on calories information use. Study participants who watched their weight and were on a weight loss program and had to limit their intakes were more likely than those who were not overweight or obese to claim that nutrition label information was important, especially with regards to calories information.

However, Nayga (1999) study who observed contradictory findings reported that people with higher body mass did not find nutrition labels to be important probably because participants believed that people are born to be fat or thin and there is not much one can do about it.

2.6.2.4 Healthy lifestyle behaviours

A wide range of studies have examined the association between nutritional label use and healthy practices, such as exercising and healthy eating habits and non-healthy practices such as smoking (Nayga *et al.*, 1998; McArthur *et al.*, 2001; Lin and Lee, 2003; Satia *et al.*, 2005; Bayar, 2009). Satia *et al.*, (2005) found that individuals with healthier eating habits report greater use of nutrition labels than those with poor eating habits. This may be due to personal preferences (Satia *et al.*, 2005) or may also be because of the requirements of a health-related diet (Nayga *et al.*, 1998; McArthur *et al.*, 2001).

Kim *et al.* (2000) study findings have shown that non smokers and those who exercised regularly used nutrient content information especially fat intake than those who did not probably because they were health conscious. Lin and Lee (2003) study to assess the effect of food label use on nutrient intakes also concluded that the more regularly a respondent exercised the less total fat she consumed. They also found that a respondent who was a current smoker tended to consume more total fat.

Bayar (2009) found that as exercising time increased among Turkish respondents, importance attached to calories information increased probably because the Turkish had cholesterol problems among all age groups. However among American individuals, as time spent exercising increased the importance for calorie information decreased probably because of the belief that the higher the activity level the more calories are burnt. Kempen *et al.* (2012) results showed that respondents who read nutrition labels are often more health conscious and practiced healthy lifestyles such as eating fresh fruit and vegetables regularly and cutting down on alcohol than those who did so less often.

2.6.3 OTHER FACTORS ASSOCIATED WITH CONSUMER AWARENESS AND USE OF NUTRITION INFORMATION

2.6.3.1 Nutrition knowledge and diet health-knowledge of consumers

Studies have emphasized that nutrition knowledge or diet-health knowledge are important factors associated with nutrition label awareness and use (Szykman *et al.*, 1997; Drichoutis *et al.*, 2005; Rasberry *et al.*, 2007).

Szykman *et al.* (1997) observed that respondents who had knowledge of diet related chronic diseases used nutritional information more often than those who did not. Likewise Kim *et al.* (1999) and Rasberry *et al.* (2007) studies results indicated that consumers who had diet - health knowledge were more likely than those who had little or no knowledge to use nutritional labels when buying food products to avoid certain nutrients and to assess the specific nutrient content (particularly fat, calories and sugar) of different products. Moorman (1998) also found that consumers with more nutrition knowledge were less doubtful toward nutritional information.

According to Nayga (1996) and Levy and Fein (1998), individuals who had adequate nutrition knowledge made better prepackage food choices. For example, Smallwood and Blaylock (1994) revealed that general nutrition knowledge about fibre content of foods was associated with higher levels of fibre consumption. Similarly, Frazao and Cleveland (1994) observed that specific knowledge about total fat content of foods was associated with increased likelihood of meeting the intake recommendations for saturated fats and cholesterol.

Furthermore a study on nutrition knowledge and consumer use of nutritional labels by Drichoutis *et al.* (2005) also confirmed that nutrition knowledge had a strong effect on nutrition label use. According to Drichoutis *et al.* (2005) individuals who have nutrition knowledge were more likely to evaluate and understand nutrition label information. They

further reported that nutrition knowledge increases the perceived benefits derived from nutrition labels and effectiveness of the nutrition label.

Contrary to these findings Nayga (2000) concluded that nutrition knowledge does not affect label use probably because having nutrition knowledge may not necessarily translate into nutrition label use.

2.6.3.2 Time spent shopping

Studies have reported a positive relationship between time spent grocery shopping and use of nutrition labels (Nayga *et al.*, 1998 ; Kim *et al.* 2001a ; Lin and Lee 2003; Drichoutis *et al.*, 2005; Bayar 2009). Nayga *et al.*, (1998) observed that people who could afford to spend a lot of time during grocery shopping, were more likely to use nutritional labels than those who were under time pressure . Drichoutis *et al.* (2005) observed similar results and more specifically revealed that respondents who report having more time to shop used cholesterol information more often than those who could not spend enough time.

Time pressure effects on nutrition label use are also apparent in Kim *et al.* (2001a) and Lin and Lee (2003) studies whereby respondents who agreed with the statement “reading labels takes more time than I can spend,” were less likely to use nutritional labels and information on fat content, respectively. Kim *et al.* (2001a) found that individuals who did not think reading nutritional labels took more time than they could spare were more likely to use nutritional labels. Bayar (2009) reported that as time spent for grocery shopping increases, importance is given to nutrition label information. According to EdComs (2007) the main barrier to reading labels is lack of time. Time pressure has been found to limit individuals’ search of nutrition information (Park *et al.*, 1989)

2.6.3.3 Importance consumers place on food attributes such as price, taste, nutrition and use of nutrition label

The importance consumers place on certain food attributes such as price taste and nutrition has been found to affect nutritional label use because of the importance of these factors in food purchasing decisions (Guthrie *et al.*,1995; Nayga ,1996; Nayga *et al.*, 1998 ; Nayga 1999 ; Nayga,2000; Lin and Lee, 2003;Drichoutis *et al.*, 2005).

Nayga *et al.*, (1998) and Drichoutis *et al.*, (2005) have shown that price and search for nutrition label information act competitively. These studies have reported that price-sensitive respondents care less about the nutritional quality of the food they buy than non-price-sensitive respondents. Consumers placing importance on price are less likely to use nutritional label information in general and some specific nutrients (Nayga *et al.*, 1998; Drichoutis *et al.*, 2005).For instance Drichoutis, *et al.* (2005) found that individuals who placed importance on price were less likely to use information on fat and cholesterol. Nayga *et al.* (1998) and Drichoutis *et al.* (2005) reported that consumers who place high importance on the price are actively looking for price information and this may then inhibit them from examining nutritional labels.

As expected Nayga *et al.* (1998) and Nayga (2000) observed that people who place high importance on nutrition are more likely to use nutritional labels. Nayga, (1996), Nayga (1999), Lin and Lee (2003), Drichoutis *et al* (2005) also found that individuals who regarded nutrition as important are more likely to use specific nutrient information. For instance Lin and Lee (2003) found that higher perceived importance of nutrition in food shopping was associated with a lower total fat consumption.

The effect of importance of taste on nutritional label use is not clear since different studies have found contradicting results. Some studies conclude that consumers who rate taste as more important are not interested in the nutrient content of the food they buy, or they believe that food of greater nutritional value will be of inferior taste (Guthrie *et al.*, 1995; Nayga,

1996; Drichoutis *et al.*, 2005;). Lin and Lee (2003) also concluded that those who placed high importance on taste consumed more fat. On the contrary Nayga *et al.* (1998) and Nayga (2000) found a positive relationship between taste and nutrition label use.

2.6.3.4 Culture and habits

Lin and Lee (2003) observed that an additional common factor which may affect use of nutrition labels may be culture and habits. Cultural background and habit can influence the fat consumption and label use behavior of individuals who have been brought up in a family with certain consumption and label use patterns, or have been habitually consuming certain foods without relying on food labels.

Loureiro *et al.* (2006) and Signal *et al.* (2007) found that respondents who purchase food products out of habit were more price conscious than those who did not. Jacob *et al.* (2010) also concluded that people may also buy out of habit because they don't have time to read detailed label information.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study Design

This was a cross-sectional study.

3.2 Study Locale

The study was conducted in the grocery sections of two major supermarkets in the Accra Metropolis: Melcom Plus located at North Industrial Area (Accra West) and Shoprite located at the Accra Shopping Mall (Accra East). The two shops were approximately 5 km apart. These shops were selected because a high volume of shoppers from a wide range of socio demographic backgrounds shop there.

3.3 Study Population

The study participants were adult (≥ 18 yrs) males and females shopping at the Melcom Plus and Shoprite supermarkets in Accra from March to May 2012. The inclusion criterion was willingness to participate.

3.4 Sample Size and Sampling Method

The sample size for the study was based on the formula $n = [(z/2m)^2]$ where n is the sample size, z is the standard score for the confidence level and m is the maximum allowable error (McCabe and Moore, 1993). Using a maximum allowable error of 5% and at 95% confidence level ($z = 1.96$), the calculated sample size was 384 which was rounded up to 400.

Participant selection was based on convenient sampling. After permission was obtained from the management of the two supermarkets, field assistants visited each supermarket and approached shoppers inside the food retail section of the supermarkets while they shopped. Participants were invited to participate in the study after the protocol was briefly explained to

them. All participants who agreed to participate were recruited until the desired sample size was obtained.

201 and 202 shoppers were interviewed from Shoprite and Melcom Plus respectively.

3.5 Data Collection

Data were collected from March to May 2012 at the study locations via face-to face interviews with shoppers who agreed to participate while they shopped. Interviews were conducted on both weekdays and weekends between 11:00 Hours and 19:00 Hours. A structured pre-coded questionnaire instrument with a few open-ended questions (See Appendix 2) was used for the interviews. The questionnaire had 4 sections; 1) Socio-demography 2) Health related data 3) Food and nutrition label awareness and 4) Food and nutrition label use. Detailed descriptions of these sections are provided below.

3.5.1 Socio-Demographic data

The socio-demographic section of the questionnaire comprised of questions on the participants' individual and household characteristics. Questions were asked on gender, age, marital status, ethnicity, level of education, household size, employment status, income level and household living arrangement.

3.5.2 Health

Respondents were asked to answer questions related to their current health status, and family history of diet-related chronic diseases. Questions were also asked on perceptions about current weight status and whether participants were on special diets for health reasons.

3.5.3 Food and Nutrition Labels Awareness

There were six questionnaire items related to sources of nutrition information, awareness that prepackaged foods carry food and nutrition labels and perceived level of understanding of

information provided by nutrition labels on prepackaged foods.

3.5.4 Nutrition Labels Use

Nutrition label use was captured using a 29-item questionnaire. The questions asked whether respondents ever use food labels and what information they were most likely to use on food labels. The questionnaire inquired whether respondents used nutrition labels, their reasons for using or not using nutritional labels, the information they most likely used on nutrition labels, how nutrition labels helped them decide what to buy and under what circumstances they chose to use nutrition labels. Use of nutrition labels was subject to respondents own definition of use. Using a list of prepackaged foods available at the supermarkets, study participants were asked to indicate which prepackaged foods they buy regularly buy. For each item that is regularly purchased, the participants were also asked to indicate whether they were not likely, quite likely, or very likely to use the nutrition label before purchasing it.

3.6 Ethical Consideration

The study protocol was approved by the Institutional Review Board of the Noguchi Memorial Institute for Medical Research. Permission was sought from management of the selected supermarkets. Written consent was obtained from each participant prior to being interviewed. Participants were given consent forms (see Appendix 1) to read and sign or thumbprint if they expressed willingness to participate.

3.7 Quality Assurance

Several measures were put in place to enhance the quality of data collected. The questionnaires were pretested on a small sample of thirty (30) individuals who were shopping at some selected supermarkets with similar characteristics to the study supermarkets. The aim was to ensure clarity of the questionnaire before being used for the data collection. Prior to the actual data collection research assistants were trained on the data collection procedure of

this study. During data collection, questionnaires were given unique identification numbers to improve traceability and batching. At the end of every interview, questionnaires were reviewed. During data entry questionnaires were coded and data cleaned to rectify all entry errors.

3.8 Data Analyses

Data entry and analysis were performed using the Statistical Package for Social Sciences (SPSS) version 16.0.

Descriptive statistics were computed for socio-demographic data, health related data, food and nutrition label awareness items, components of a food label most likely to be used, nutrition label use and components of a nutrition label most likely to be used. Percentages were calculated for categorical variables and means and standard deviations for continuous variables. Awareness of food and nutrition labels was categorized into two (2) levels of low and high awareness based on the response to four awareness questions (Questions 18-21). Those who answered yes to all four questions were classified as having high awareness and those who said yes to at least one question were classified as having low awareness. Those who never used nutrition labels and those who sometimes or often used nutrition labels were categorized into the 'do not use' and 'use' groups respectively.

Chi square (χ^2) tests were used to look at differences between those who have a high awareness of nutrition labels and those who had a low awareness, those who use it and those who do not, with respect to socio-demographic and health related characteristics of respondents. Logistic regression with associated odds ratios (ORs) and their 95% confidence intervals (CIs) was used to determine factors which predict awareness and use of nutrition label. $P < 0.05$ were considered statistically significant. The independent variables were gender, age, ethnicity, marital status, level of education, household size, household

composition, employment status, income level, history of health condition and special diet.

The dependent variables were high awareness, low awareness, use and do not use groups.

CHAPTER FOUR

4.0 RESULTS

4.1 BACKGROUND CHARACTERISTICS OF PARTICIPANTS

Table 4.1 below presents the background characteristics of the 403 shoppers interviewed at the two study sites. There were slightly more males than females and the average age of the shoppers was 30.4 ± 9.8 years, 53.1% had tertiary or advanced education, 37% were married, 42.9% were employed and 47.9% earned a monthly income of more than GH¢ 500 and the average household size represented was 3.

With the exception of level of education and household composition, shoppers at the two supermarkets had similar socio-demographic characteristics. Shoppers at Shoprite were significantly more likely to have tertiary or higher education ($P=0.014$) and significantly less likely to be living with alone or with friends and siblings ($P=0.013$) than the shoppers at Melcom Plus.

Table 4.1: Background characteristics of participants (N= 403)

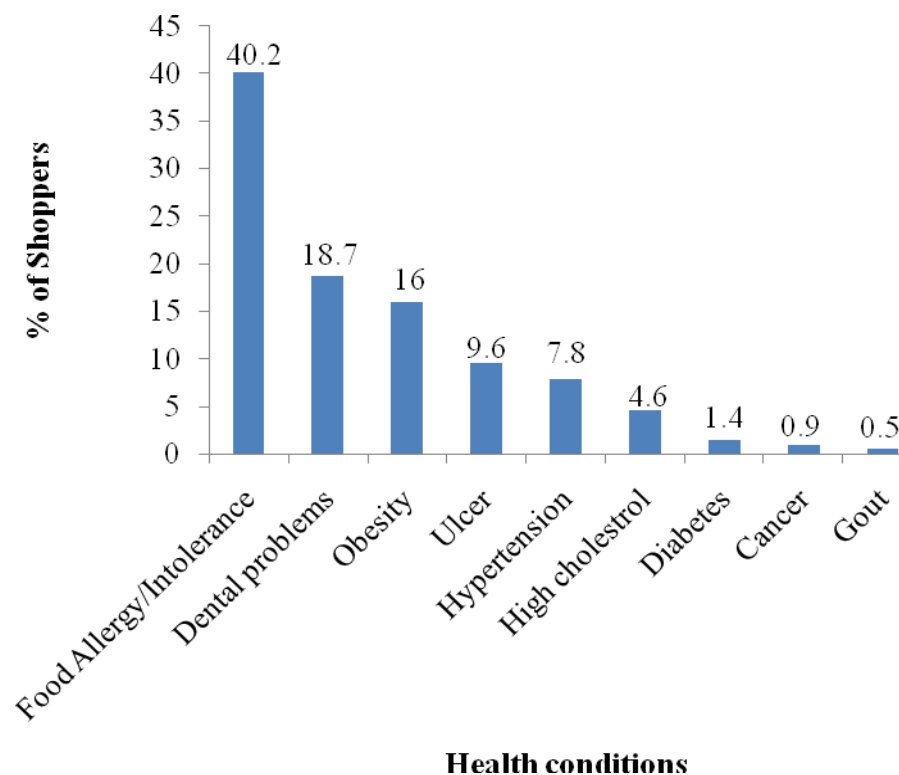
Variable	All (N= 403)	Shoprite (n= 201)	Melcom Plus (n= 202)	P- value [†]
Sex				
Male	203 (50.4) ¹	103 (51.2)	100 (50.4)	0.765
Female	200 (49.6)	98 (48.8)	102 (49.6)	
Age (years) (n= 401)	30.4 ± 9.8 ²	31.3 ± 10.3	29.5 ± 9.3	0.072
≤ 23	100 (24.9)	49 (24.4)	51 (25.5)	0.093
24-28	116 (28.9)	48 (23.9)	68 (34.0)	
29-35	94 (23.4)	52 (25.9)	42 (21.0)	
≥36	91 (22.7)	52 (25.9)	39 (19.5)	
Ethnic Group (n= 402)				
Akan	177 (44.0)	92 (46.0)	85 (42.1)	0.324
Ewe	67 (16.7)	38 (19.0)	29 (14.4)	
Ga-Adangbe	64 (15.9)	31 (15.5)	33 (16.3)	
Northern	35 (8.7)	16 (8.0)	19 (9.4)	
Foreigner	59 (14.7)	23 (11.5)	36 (17.8)	
Level of education				
≤JSS/Middle	27 (6.7)	7 (3.5)	20 (9.9)	0.014
SHS/SSS/Vocational/Technical	162 (40.2)	77 (38.3)	85 (42.1)	
≥Tertiary	214 (53.1)	117 (58.2)	97 (48.0)	
Marital Status				
Not married	254 (63.0)	121 (60.2)	133 (65.8)	0.257
Married/Cohabiting	149 (37.0)	80 (39.8)	69 (34.2)	
Household Size	4.3 ±	4.3 ±	4.3 ±	
	3.3(1.0,32.0) ³	2.6(1.0,13.0)	3.9(1.0,32.0)	0.972
≤3	176 (43.7)	85 (42.3)	91 (45.0)	0.749
4 to 5	129 (32.0)	64 (31.8)	65 (32.2)	
≥6	98 (24.3)	52 (25.9)	46 (22.8)	
Children ≤18 Years in Household	1.2 ± 1.6	1.2 ± 1.3	1.3 ± 1.9	
	(0.0,14.0) ³	(0.0,6.0)	(0.0,14.0)	0.654
Household Composition				
Single Parent with Children	36 (8.9)	24 (11.9)	12 (5.9)	0.013
Couples with Children	210 (52.1)	111 (55.2)	99 (49.0)	
Couple with no Children	19 (4.7)	11 (5.5)	8 (4.0)	
Other(lives alone with friends or siblings)	138 (34.2)	55 (27.4)	83 (41.1)	
Employment Status				
Unemployed	230 (57.1)	122 (60.7)	108 (53.5)	0.159
Employed	173 (42.9)	79 (39.3)	94 (46.5)	
Average Monthly Income (GH¢) (n= 397)				
≤500	207 (52.1)	100 (50.5)	107 (53.8)	0.547
>500	190 (47.9)	98 (49.5)	92 (46.2)	

¹ n (%)² mean±SD³ mean±SD (Range)[†]P values associated with Pearson Chi-Square for categorical variables and Independent t-test for continuous variables

4.2 PREVALENCE OF DIET-RELATED HEALTH CONDITIONS AMONG PARTICIPANTS

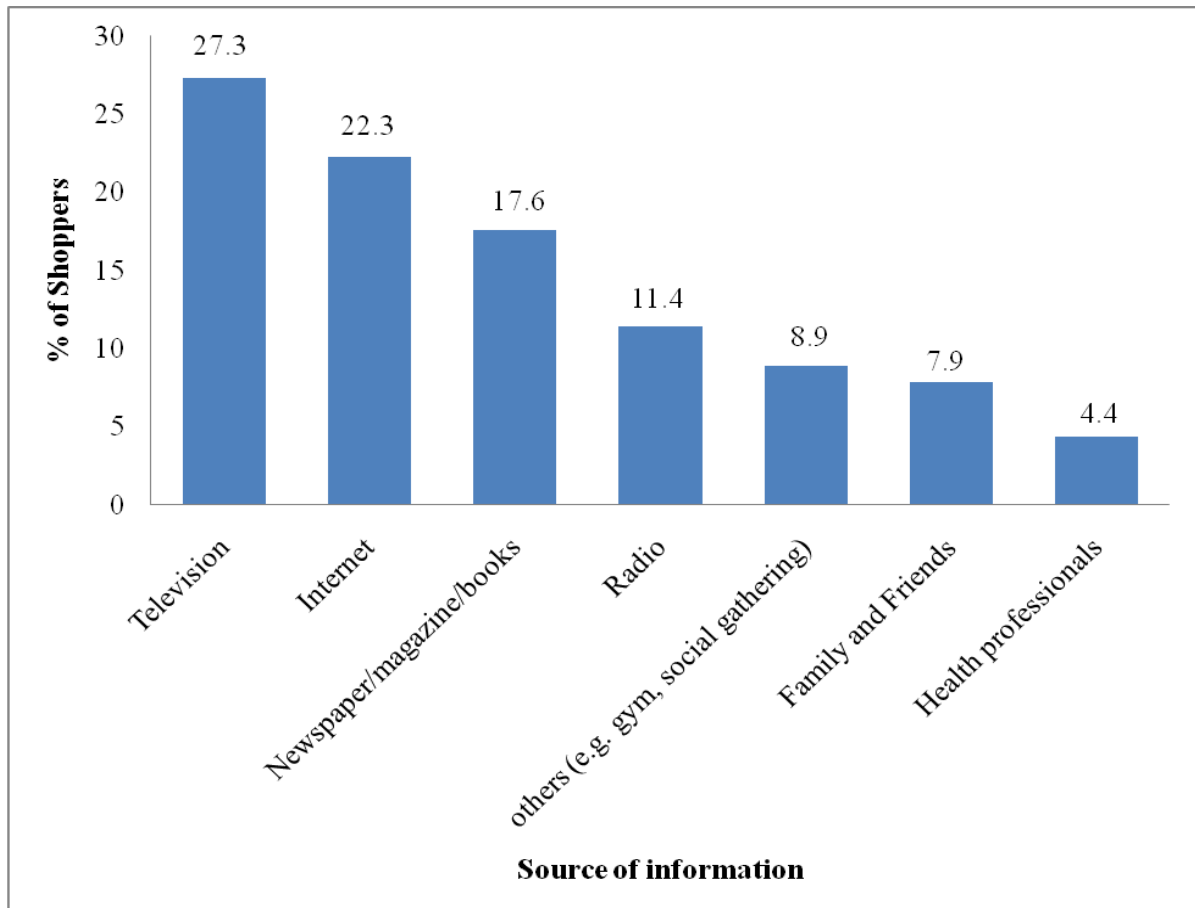
The prevalence of diet-related health conditions reported by the respondents participating in this study are summarized in Figure 4.1. The most commonly reported health condition among the shoppers was food allergy/intolerance and the least common current health condition was kidney disease. Obesity, hypertension and diabetes were 16.0%, 7.8%, 1.4% cases respectively.

Figure 4.1: Prevalence of current diet related health conditions reported by study participants



4.3 COMMON SOURCES OF NUTRITION INFORMATION FOR PARTICIPANTS

Participants' common sources of nutrition information are shown in Figure 4.2. The television (27.3%) and internet 22.3% were the major sources of nutrition information for the



respondents. Less than 5% of shoppers mentioned health professionals as sources of nutrition information.

Figure 4.2: Participants' common sources of nutrition information.

4.4 PARTICIPANTS' LEVEL OF AWARENESS AND UNDERSTANDING OF NUTRITION LABELS

Respondents' responses to questions determining level of awareness and understanding of nutrition labels is summarized in Table 4.2 below. 97.5% of the respondents were aware that some pre-packaged foods carry food labels. 92.3% reported they were aware that some food labels carried nutrition information about the food but only about 83.1% of the respondents ever noticed/seen the nutrition label on any pre-packaged food. About 58.3% of the respondents rated themselves having moderate understanding of nutrition label information. Another 22.8% of the respondents rated their understanding of nutrition labels as high and 18.9% rated their understanding as low. 82% of the respondents showed high awareness of nutrition labels on prepackaged foods compared to 18% who showed low awareness.

Table 4.2: Respondents' level of awareness of nutrition information on food labels of prepackaged foods

Respondents	n (%)
Aware that some pre-packaged foods carry food labels	393 (97.5)
Have noticed/seen the food label on pre-packaged foods	375 (93.1)
Aware that some food labels contain nutrition information about the food	372 (92.3)
Ever noticed/seen the nutrition label on any pre- packaged food	335 (83.1)
Have high awareness of nutrition labels	330 (81.9)
Have low awareness of nutrition labels	73 (18.1)
Have a high understanding of nutrition label information	92 (22.8)
Have a moderate understanding of nutrition label information	235 (58.3)
Have a low understanding of nutrition label information	76 (18.9)

4.5 USE OF THE VARIOUS COMPONENTS OF FOOD LABELS AMONG PARTICIPANTS

Use of the various components of food label information among respondents is shown in Figure 4.3. The components of food labels that were most likely to be used by the shoppers who reported that they read food labels were the expiration date (26.9%) and nutrition label information (19.6%) and the least used was information on additives (4.1%). Other major components of food labels that respondents usually used were list of ingredients and manufacturing date. 25% of respondents reported they never used nutrition labels, 53% reported they sometimes used the nutrition label and 22% reported they often used the nutrition label.

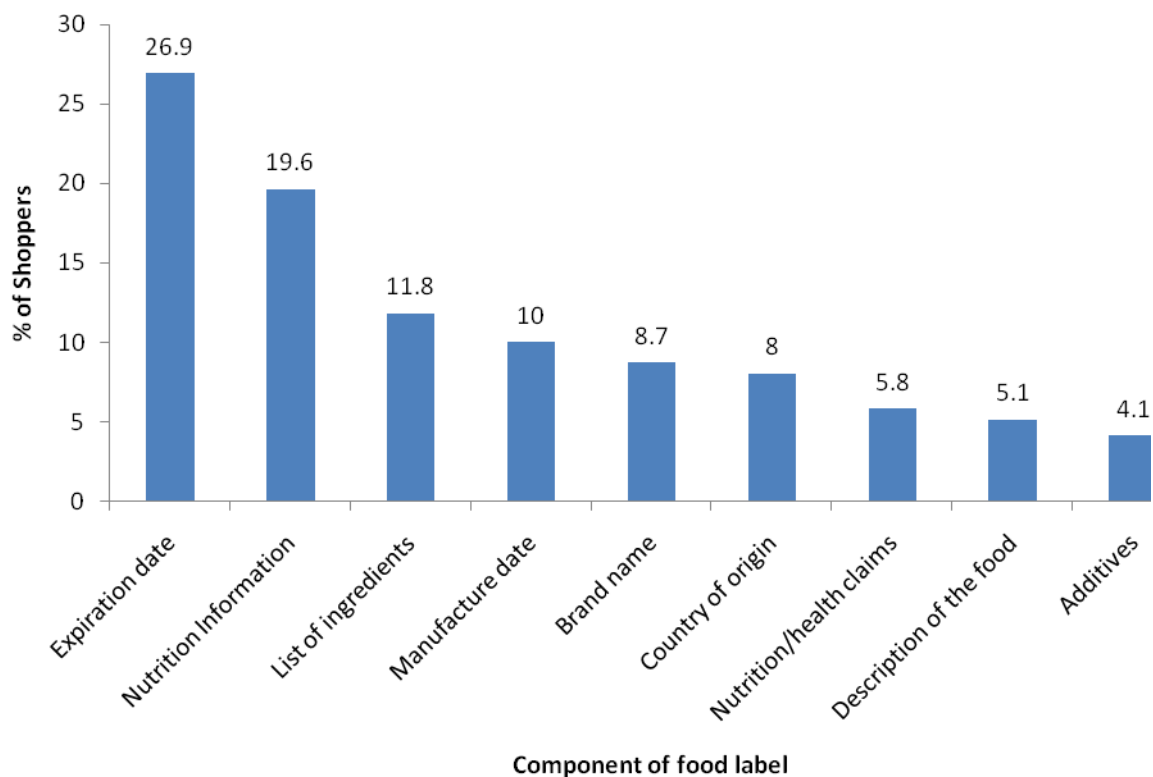


Figure 4.3: Components of a food label that study participants were most likely to use (N= 382)

4.6 USE OF THE VARIOUS COMPONENTS OF NUTRITION LABEL INFORMATION AMONG PARTICIPANTS

The components of the nutrition label on prepackaged foods that participants were most likely to use are shown in Figure 4.4. The most commonly used nutrition information was Fat (16.4%) and the least used nutrition information was saturated fats (4.9%). Other key ones of interest were information on sugar content (16.1%), Cholesterol (13.7%), sodium (7.2%), total energy (5.7%) and fibre (5.7%).

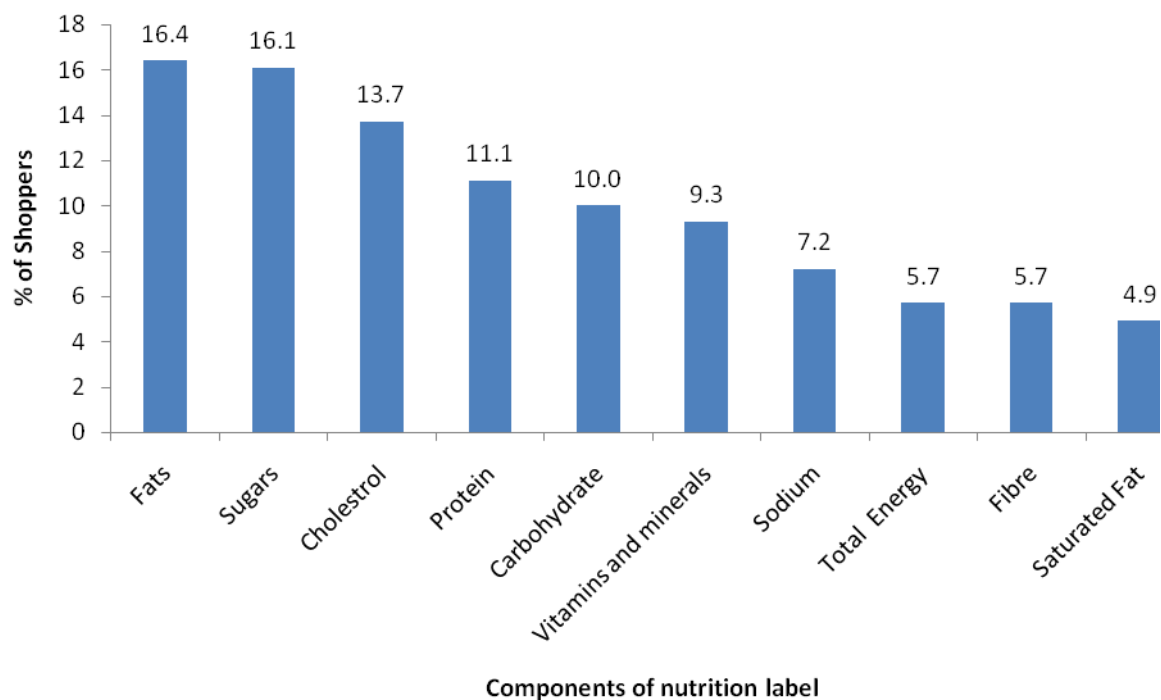


Figure 4.4: Components of a nutrition label that participants were most likely to use on prepackaged foods (N= 301)

4.7 PARTICIPANTS' LIKELIHOOD TO CHECK NUTRITION LABELS OF DIFFERENT CATEGORIES OF PREPACKAGED FOODS.

The mean proportions of different categories of different categories of prepackaged foods that shoppers were likely to check the nutrition labels before purchase are presented in Figure 4.5. Of the respondents who said they purchased prepackaged beverages, cereal and cereal products, spreads and salad dressings, approximately 60% reported they were either quite likely or very likely to check nutrition labels and approximately 40% were not likely to do so. Close to half of the respondents who buy prepackaged fruits and vegetables, meat/fish ,dairy products and 'other' prepackaged enlisted as frozen meals, biscuits, crackers, nuts, oils were either quite likely or very likely to check the nutrition labels and close to half reported they were not likely to check before buying.

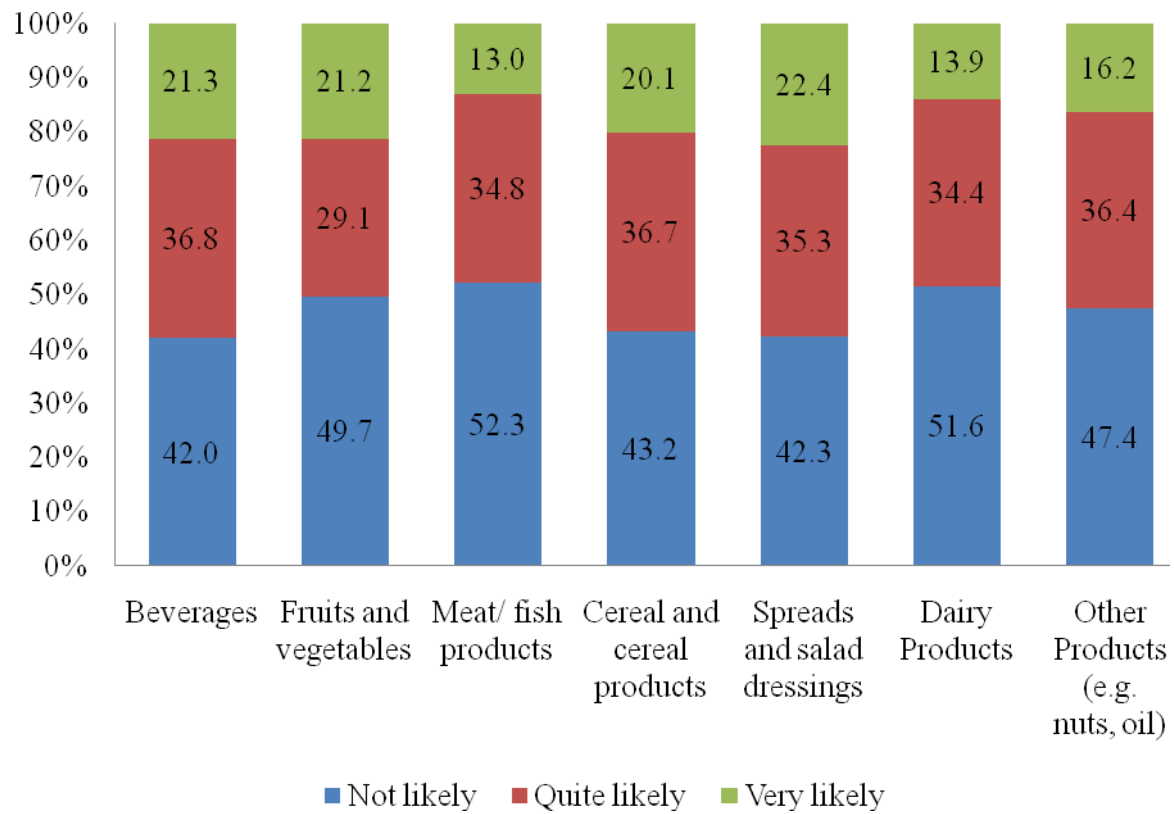


Fig. 4.5: Mean proportion of different categories of prepackaged foods that shoppers were likely to check the nutrition label before purchase.

4.8 FACTORS ASSOCIATED WITH NUTRITION LABEL AWARENESS AND USE AMONG PARTICIPANTS

Differences in socio-demographic characteristics and health characteristics of shoppers who had a low awareness and those who had a high awareness of nutrition labels, and differences between those who do not use nutrition labels and those who used nutrition labels are shown in Table 4.3 and Table 4.4 respectively. Positive associations were observed between educational status, income and nutrition label awareness. There were notable differences in nutrition label awareness by level of education. A larger proportion of respondents with education from Senior High School (SHS) and beyond reported being aware of nutrition labels than did those whose education level were Junior High School (JSS) and below ($P \leq 0.001$). There was no statistically significant difference between, sex, age, marital status, employment status, history of health condition, special diet status and awareness of nutrition label.

Positive associations between educational level, employment status, marital status and nutrition label use were observed. Participants with education beyond Senior High School (SHS) were significantly more likely to use nutrition information than were participants with Junior High School (JHS) or lower education level (all $P=0.018$). There were no associations of sex, age special diet or health condition and nutrition label use.

Table 4.3: Differences in socio-demographic characteristics and health characteristics of shoppers who had a low awareness and those who had a high awareness of nutrition labels (N= 403)^a

Variable	Nutrition Label Awareness		P-value
	Low (N= 73)	High (N = 330)	
Sex			
Male	40 (54.8) ¹	163 (49.4)	0.439
Female	33 (45.2)	167 (50.6)	
Age (years)			
≤ 23	20 (27.4)	80 (24.4)	0.862
24 –28	22 (30.1)	94 (28.7)	
29 –35	17 (23.3)	77 (23.5)	
≥ 36	14 (19.2)	77(23.5)	
Education			
None/Primary/JHS/Middle	10 (13.7)	17 (5.2)	<0.001
SHS/SSS/Voc/Tech	42 (57.5)	120 (36.4)	
≥ Tertiary	21 (28.8)	193 (58.5)	
Marital Status			
Not married	50 (68.5)	204 (61.8)	0.348
Married	23 (31.5)	126 (38.2)	
Employment			
Unemployed	49 (67.1)	181 (54.8)	0.067
Employed	24 (32.9)	149 (45.2)	
Income (GH¢)			
≤500	49 (67.1)	158 (48.8)	0.006
>500	24 (32.9)	166 (51.2)	
History of Health Condition			
Yes	26 (35.6)	146 (44.2)	0.193
No and Don't know	47 (64.4)	184 (55.8)	
Special Diet			
Yes	5 (6.8)	10 (3.0)	0.162
No	68 (93.2)	320 (97.0)	

^aPercentages based on 403 participants, Number of participants may vary due to missing values; ¹n (%) Chi square tests for associations.

Table 4.4: Differences in socio-demographic characteristics and health characteristics of shoppers who use nutrition labels and those who do not (N= 403)^a

Variable	Nutrition Label Use		P-value
	Do not use (N= 102)	Use (N= 301)	
Sex			
Male	44 (43.1)	159 (52.8)	0.109
Female	58 (56.9)	142 (47.2)	
Age (years)			
≤ 23	31 (30.7)	69 (23.0)	0.165
24 –28	33 (32.7)	83 (27.7)	
29 –35	19 (18.8)	75 (25.0)	
≥ 36	18 (17.8)	73 (24.3)	
Education			
None/Primary/JHS/Middle	11 (10.8)	16 (5.3)	0.018
SHS/SSS/Voc/Tech	48 (47.1)	14 (27.9)	
≥ Tertiary	43 (42.2)	171 (56.8)	
Marital Status			
Not married	73 (71.9)	181 (60.1)	0.044
Married	29 (28.4)	120 (39.9)	
Employment			
Unemployed	67 (65.7)	163 (54.2)	0.049
Employed	35 (34.3)	138 (45.8)	
Income (GH¢)			
≤500	67 (66.3)	140 (47.3)	0.001
>500	34 (33.7)	156 (52.7)	
History of Health Condition			
Yes	43 (42.2)	129 (42.9)	1.000
No and Don't know	59 (57.8)	172 (57.1)	
Special Diet			
Yes	3 (2.9)	12 (4.0)	0.770
No	99 (97.1)	289 (96)	

^aPercentages based on 403 participants, Number of participants may vary due to missing values; ¹n (%) Chi square tests for associations.

4.9 FACTORS THAT PREDICT NUTRITION LABEL AWARENESS AND USE AMONG PARTICIPANTS

Associations ORs and (95% CIs) of socio-demographic factors, health-related data with nutrition label use and awareness among shoppers are given in Tables 4.5 and 4.6. No significant predictors of nutrition label use were observed. The only correlate of high level of nutrition label awareness was education. Respondents who were least educated $\leq$ Middle had 0.20 (0.1, 0.6) ORs (95% CIs) of having high awareness, respondents with SHS/SSS/Vocational/Technical had 0.30 (0.2, 0.6) ORs (95% CIs) of having high awareness compared to individuals with Diploma and beyond.

Table 4.5: Logistic regression to show factors that predict nutrition label awareness among shoppers in the study (N=403)^a

Variable	OR	(95% CI)	P-value
Sex of respondent			
Male	0.8	(0.4, 1.4)	0.465
Female		1.0	
Age of respondent			
≤ 23 years	2.1	(0.8, 5.9)	0.157
24-28 years	1.2	(0.5, 3.0)	0.753
29-35 years	0.9	(0.4, 2.2)	0.847
≥36 years		1.0	
Level of formal education			
None/Primary/JHS /Middle	0.2	(0.1, 0.6)	0.002
SHS/SSS/Vocational/Technical	0.3	(0.2, 0.6)	0.001
Diploma/Degree/Postgraduate degree		1.0 **	
Marital status			
Not married	0.9	(0.4, 1.9)	0.806
Married		1.0	
Employment status			
Unemployed	0.8	(0.4, 1.4)	0.414
Employed		1.0	
Income level			
≤500 GHC	0.7	(0.4, 1.4)	0.367
>500 GHC		1.0	
History of health condition			
Yes	1.2	(0.6, 2.1)	0.605
No/ Don't know		1.0	
Special diet			
Yes	0.4	(0.1, 1.4)	0.178
No		1.0	

^aPercentages based on 403 participants, Number of participants may vary due to missing values; ^{1.0} Reference category; **P ≤0.01

Table 4.6: Logistic regression to show factors that predict nutrition label use among shoppers in the study. (N=403)^a

Variable		OR	(95% CI)	P value
Sex of respondent				
	Male	1.5	(0.9, 2.5)	0.095
	Female		1.0	
Age of respondent				
	≤ 23 years	1.2	(0.5, 3.0)	0.705
	24-28 years	1.0	(0.4, 2.3)	0.990
	29-35 years	1.0	(0.5, 2.3)	0.948
	≥36 years		1.0	
Level of formal education				
	None/Primary/JHS /Middle	0.5	(0.2, 1.4)	0.195
	SHS/SSS/Vocational/Technical	0.8	(0.4, 1.4)	0.460
	Diploma/Degree/Postgraduate degree		1.0	
Marital status				
	Not married	0.7	(0.4, 1.4)	0.319
	Married		1.0	
Employment status				
	Unemployed	0.8	(0.5, 1.3)	0.322
	Employed		1.0	
Income level				
	≤500 GHC	0.6	(0.3, 1.0)	0.066
	>500 GHC		1.0	
History of health condition				
	Yes	1.0	(0.6, 1.6)	0.845
	No/ Don't know		1.0	
Special diet				
	Yes	1.8	(0.5, 6.6)	0.392
	No		1.0	

^aPercentages based on 403 participants, Number of participants may vary due to missing values; ^{1.0} Reference category; **P ≤0.01

CHAPTER FIVE

5.0 DISCUSSION

Studies have shown that use of nutrition labels on prepackaged foods impact positively on consumers' diet and health. The study assessed level of awareness and use of nutrition labels on pre-packaged foods among shoppers in Accra and factors which influence them.

5.1 Awareness of Nutrition Labels Among Study Participants

Majority (81.9%) of the shoppers interviewed in this study had high level of awareness of nutrition labels. This was because a large percentage of the participants in this study (93.35%) were highly educated i.e had SHS education and beyond. Nayga (1996) and Loureiro *et al.* (2006) explained that highly educated consumers are more likely to read scientific, academic articles or prints and are more likely to be exposed to health and nutrition related news sources and thus increasing their awareness of diet and health issues.

Similarly a number of studies who observed that a greater part of their participants were aware of nutrition labels on prepackaged also observed that a greater proportion of their participants had high education (Schupp *et al.*, 1998; Mahgoub *et al.*, 2007 and Washi, 2012). For instance Schupp *et al.* (1998) found that majority of their participants (52.2%) were aware of nutrition labels and most of them had high school or higher education. Mahgoub *et al.* (2007) study also reported that almost 70% of their participants knew about nutrition labels, their study revealed that a large number of their respondents had high school education, certificate, diploma, degree and masters. Washi (2012) study also observed that a large number of participants (89.5%) showed a general awareness for food label information including nutrition label information and 69.5% of the participants were university graduates.

5.2 Food Label Information Most Likely To Be Used By Consumers When Purchasing Prepackaged Foods

The study further sought to find out which components of food label information were most likely to be used by consumers when purchasing prepackaged foods. It was observed that consumer interests varied when using food label information. Participants were most likely to use expiration date (26.9%), nutrition label information (19.6%) and list of ingredients (11.8%) in descending order of importance, with the expiration date being the most used food label information.

Several studies have made similar observations (Kumar and Pandit, 2008; Jacob *et al.*, 2010; Washi, 2012). For instance Jacob *et al.* (2010) found that the components of food label information which were mostly used on prepackaged foods were expiration date, the list of ingredients and nutritional label information in descending order, with expiration date being the most important. Washi's (2012) study also found that majority of the consumers (85.6%) look out for expiration date followed by production dates (70.3%). According to Jacob *et al.* (2010) consumers found it very important to search for products with the longest shelf-life and expiration date. Peters-Teixeira and Badrie (2005) in their study also stated that this may be because expiration date indicates freshness of the food product. Washi (2012) further reported that consumers were probably more concerned about the risks involved in consuming expired food products. This primary interest in expiration date in this study may be the reason why 52.9% of the participants reported they used nutrition labels 'only sometimes' and 25% reported they 'never used' the label and 40% to 50% of respondents also indicated that were "not likely" to check nutrition labels on the enlisted common prepackaged foods found on the Ghanaian market before buying them. These observations may indicate that participants were less concerned about the nutritional content of a prepackaged food they purchased once they were satisfied with the expiration date.

Challenges in understanding nutritional label information could also lead to less use of nutrition labels since majority of respondents reported that they had moderate understanding of the nutrition label information.

5.3 Components of Nutrition Label Information Most Likely To Be Used By Consumers When Purchasing Prepackaged Foods

Participants in this study who reported that they used nutrition label information showed varying interests in relation to specific nutrient information. Similar to this finding Marietta *et al.* (1999) and Drichoutis *et al.* (2005) studies have observed that use of the various components of nutrition label information varied among consumers and for different reasons. For instance Drichoutis *et al.* (2005) study among adult shoppers in Athens in Greece found that younger individuals were more likely to use vitamin and mineral information probably because it was important for their physiological development and younger female participants were more likely to look at energy than men probably because they wanted to avoid excess energy to prevent excess weight gain. Marietta *et al.* (1999) also concluded that those who used carbohydrates and fibre information probably did so to avoid excess carbohydrates and consume more fibre.

Nutrient information most likely to be used by respondents in this study were fat (16.4%), sugar (16.1%) and cholesterol information (13.7%) in order of importance. This finding agrees with Jacob *et al.* (2010) study who found that respondents who used nutrition label information mostly sought after fat and cholesterol information. The notable prevalence of dental disease, obesity, hypertension and high cholesterol levels reported among respondents in this study may explain why fat, sugar and cholesterol content were the most used nutrition label information since high consumption of these nutrients are known to be associated with these diseases. Management of these diet-related health conditions require avoidance of these nutrients or moderate consumption as reported by Shine *et al.* (1997) study that consumers

tend to look more closely at nutrients they wish to avoid. For instance Wandel (1997) and Lin *et al.* (2004) studies found that low-fat dieters were more likely to look at fat information. Drichoutis *et al.* (2005) also indicated that cholesterol was most often used by older consumers probably because of cholesterol problems associated with aging. Krueter and Brennen (1997) also indicated that patients with hypertension or elevated blood cholesterol were more likely to look for sodium and fat information respectively.

The increasing awareness of the relationship between diet and health may also entice consumers to avoid nutrients such as fats, sugar and cholesterol as a preventive health measure. For example Lin *et al.* (2004) found that sub-urban participants who knew about diet–health relationship looked for cholesterol information on nutrition labels. Kim *et al.* (1999) and Rasberry *et al.* (2007) studies also observed that consumers who had diet-health knowledge avoided certain nutrients particularly fat, calories and sugar. Saturated fat content was however the least used nutrition label information in this study. This may be because participants did not understand the technical term ‘saturated fats’ or may probably ignore it once they were satisfied with total fat content.

5.4 Factors Associated With Awareness and Use of Nutrition Information on Prepackaged Foods

Earlier studies have found that socio-demographic characteristics such as gender, age, education, health status, special diet status and other factors like time spent in the grocery shop, nutrition knowledge, price and taste influence consumers’ awareness and use of nutrition labels (Nayga , 1996; Drichoutis *et al.*, 2005; Loureiro *et al.*, 2006; Mahgoub *et al.*, 2007; Wiles *et al.*, 2009; Kasapila and Shawa, 2011). In this study the factors associated with nutrition label awareness were level of education and income and the factors found to be associated with nutrition label use were education, employment status, income and marital status. Educational level was the only predictor of awareness of nutrition labels in this study.

Study participants who had SHS education and beyond were more likely to be aware and used nutrition labels than did participants who had JHS/Middle education and below. This observation agrees with Schupp *et al.* (1998) who observed that respondents who had high school or higher education were more likely to be aware and used nutrition labels more than those who had lesser education. Likewise studies have observed that people with graduate, postgraduate or doctorate degrees were more likely to be aware of and paid significantly greater attention to nutrition label information while purchasing processed or packaged food items as compared to respondents who had lesser education (Guthrie *et al.*, 1995; Neuhouser *et al.*, 1999; Nayga, 2001; Kumar and Pandit, 2008 and Wiles *et al.*, 2009). Nayga, (1996) and Loureiro *et al.* (2006) reported that the higher educated were more likely to be read or are more exposed to health related information thus resulting in a higher awareness and use among this group. Guthrie *et al.*, (1995) and Drichoutis *et al.*, (2005) also reported that the higher educated are more likely to understand and interpret nutrition labels and this may warrant higher awareness and use among the higher educated than the lower educated. These findings reflects the need to increase awareness of the presence of nutrition labels on prepackaged foods and the dietary benefits of using them especially among the lower educated.

Participants who earned higher incomes also showed a higher awareness and were more likely to use nutrition labels than did participants who had lower incomes as observed in studies (Nayga, 1996; Kim *et al.*, 2001a; McLean-Meyinsse, 2001; Drichoutis *et al.*, 2005; Mahgoub *et al.*, 2007; Wiles *et al.*, 2009). This observation may be because Loureiro *et al.* (2006) observed that higher income earners are more likely to show more responsibility for their health since they are more likely to have a higher educational background. Nayga *et al.* (1998) and Drichoutis *et al.* (2005) pointed out that low income earners may be more price-sensitive for economic reasons and therefore may be more concerned about the cost of foods

they purchased than the nutritional quality. However these findings were contrary to Schupp *et al.* (1998) who observed that higher income earners were less likely to read nutrition labels because they are more likely to work more hours and therefore may not have enough time to spare to read nutrition labels whilst shopping.

Association was observed between employment status and nutrition label use. Employed respondents were more likely to use nutrition labels than the unemployed. Other studies have observed similar associations but with different reasons. For instance Drichoutis *et al.* (2005) observed that employment status was positively associated with use of nutrition labels but with specific nutrient information such as vitamins and minerals probably because of the need for these nutrients because of lack of time to eat properly. Guthrie *et al.* (1995) and Schupp *et al.* (1998) studies on the other hand reported that retired and unemployed respondents were more likely to use nutrition labels more than the employed because they had more time to pay attention to issues concerning their health.

The study showed that marital status of participants was associated with nutrition label use as observed by Schupp *et al.*, (1998) who made similar observations and reported that married consumers were more likely to have responsibility not only for their health but for the health of their children as well. This supports Washi (2012) study who observed that households with children used nutrition labels more often than households without children.

No associations were observed between gender and use of nutrition labels in this study. This observation agrees with Burton *et al.*, (1999), Nayga (2000) and Peters-Teixeira and Badrie, (2005) studies who also found no association between gender and use of nutrition labels. This may probably be because men as well as women are becoming increasingly aware of diet and health and it is those who perceive diet as important to their lifestyle who are more likely to use nutrition label information (Wang *et al.*, 1995; Szykman *et al.*, 1997; Nayga, 2000). This study findings however contradicts Nayga (1999), Kim *et al.*, (2001a), Prathiraja and

Ariyawardana (2003), Worsley (2003) and Satia *et al.*, (2005) studies who observed that women were more likely than men to use nutrition labels probably because of their gender roles and their natural interest to provide safe and wholesome food for their families. The study findings again contradict observations by Aboulnasr (2010) study who observed that men were more likely to use and regard nutrition labels as important than females, probably because the study found that men's perceptions about disease risk was higher than females.

Age was not associated with awareness and use of nutrition labels in this study. This observation agrees with the findings of Klopp and McDonald(1981) who also found no association between age and nutritional label use but contradicts Lin and Lee (2003) and Drichoutis *et al.*, (2005) study who reported that the aged are more likely to use nutrition labels because they are more likely to have health problems and therefore may be observing restricted diets which necessitates the use of information such as fat ,cholesterol and health benefit information. This study finding also did not agree with the results of Reid *et al.* (1996), Wandel (1997), Loureiro *et al.* (2006), Mannell *et al.* (2006) who found association between age and use of nutrition labels and observed that middle aged or younger adults were more likely to use nutrition labels than older individuals probably because older people perceived nutrition labels as less understandable. The reason for age not being found to be associated with nutrition label use in this study may be because whilst the older people look out for nutrition label because of health problems or experience, Gould and Lin (1994) reported that younger people due to improved technology are also easily exposed to readily available health and nutrition knowledge which may motivate them to use nutrition information.

Again no associations were found between history of diet-related health condition, special diet status and nutrition label awareness and use contrary to the expectation that those having diet-health conditions and those on special diets are expected to check the nutrient content of

prepackaged foods that they buy (Drichoutis *et al.*, 2005). This may be because health professionals were indicated as participants' least source of nutrition information. This study findings contradicts Lewis *et al.* (2009) and Bayar (2009) who observed that nutrition awareness and use were higher among people with chronic diseases such as hypertension, hypercholesterolemia, diabetes, obesity and heart disease as compared to those without these chronic disease. Again, the study findings did not agree with Kim *et al.*, (2000) and Lin and Lee (2003) who found that respondents on a special diet used nutrition label information more than respondents who were not on special diet. Drichoutis *et al.* (2005) also found that nutrition label use was high among persons on a special diet.

The study findings imply that dieticians and health professional need to encourage persons with health conditions and those who are on special diet to include the use of nutrition labels on prepackaged foods in the management of their diets.

5.5 Limitations

There were some limitations in this study therefore some caution should be taken in interpreting these results. The study was done in Accra which is a metropolitan area. It is possible that if the study was done in the countryside different results could be found. It may therefore not be possible to generalize the findings for the whole country. The self-reported responses may not represent actual awareness and use of nutrition labels.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Majority of shoppers were aware of the presence of nutrition labels on prepackaged foods (81.9%).

Shoppers were most likely to use expiration date (26.9%), nutrition information (19.6%) and list of ingredients (11.8%) on food labels in decreasing order of importance when purchasing prepackaged foods. This shows that expiration date was the most used food label component in making purchasing decisions.

Shoppers who used nutrition labels were most likely to use information on fats (16.4%), sugar (16.1%) and cholesterol (13.7%) in order of decreasing importance. This indicates consumers' primary interest in these three nutrients.

Associations were found between educational level, income and nutrition label awareness. Associations were found between educational level, income, employment status, marital status and nutrition label use. However only level of education strongly predicted awareness of nutrition label. This shows that education level plays a significant role in the awareness of nutrition labels.

6.2 Recommendations

Special efforts should be made to enhance awareness about nutrition labels among the lower educated by encouraging them through public education to look out for nutrition information on prepackaged foods they purchase. This can be done through popular radio and television programs which appeal to this group, such as in between football matches, news and local dramas and should be shown at prime advertising times. Interpersonal interaction during

social gatherings can also be used to enhance awareness about nutrition labels. Targeting professional groups such as hairdressers association, dressmakers association, and artisan groups could be a good strategy to enhance awareness among the lower educated.

Promoting the benefits of nutrition labels through public education can motivate consumers to often use nutrition label information when purchasing prepackaged foods. Consumers should also be encouraged to check all components of nutrition information when shopping and pay more attention to saturated fat information when purchasing prepackaged foods. Internet and newspapers /magazines can also be major players in public education efforts targeted at consumers with higher education since these were among the major sources from which they obtain information on nutrition. These programs should include showing consumers how to interpret nutrition label information so as to use it effectively in making healthy prepackaged food choices. Non-numeric nutritional label formats such as logos, symbols and colour coding may be easier understood by the lower educated so it is recommended that numeric formats should be combined with non- numeric formats to motivate the lower educated to use the nutrition label. Public education efforts to enhance awareness and use of nutrition labels among consumers should involve all stakeholders, i.e the Ministry of health of Ghana, the regulatory agencies, the food and nutrition departments of the universities and consumers.

Health professionals and gym instructors should encourage their clients to use nutrition information on prepackaged foods they purchase as part of dietary and weight management efforts.

Based on the findings on prevalence of reported diet related health conditions among study participants, Ghana should consider instituting mandatory nutrition labelling so as to offer consumers the opportunity to discriminate between different products on the basis of their nutrition contents.

Further studies to find out challenges consumers encounter in the use of the nutrition labels should be done so that these difficulties can be addressed to enhance consumer use of the nutrition label to enable them make healthy food choices.

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APPENDICES

APPENDIX I

CONSENT FORM

Title: Awareness and Use of Nutrition Labels on Pre-packaged Foods Among Consumers in Accra

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General Information about Research

The purpose of this study is to assess consumer awareness and use of nutrition information as a baseline evidence to make recommendations to improve nutrition information usage in Ghana. Selected participants will be shoppers above age 18 years who come to shop at the selected supermarkets.

We invite you to participate in a research study on awareness and use of nutrition information on food labels of prepackaged foods in Accra. If you agree to participate in the study, your involvement will consist of filling out this questionnaire, which should take approximately 10-15 minutes to complete. You will be asked to answer questions relating to nutritional label awareness and use of prepackaged foods.

You will also be asked to sign or thumb print to serve as a proof of your agreement. We will give you a copy of this form. All information you provide will be confidential and will not be linked to you anywhere. Given this, please provide honest and complete answers to the questions contained in the survey. Participation in this research is voluntary.

Possible Benefits

It is possible that you will not benefit directly by participating in this study. The information that we learn from this study will help us address issues relating to nutrition label use in Ghana.

Confidentiality

All information will be anonymous. None of the information you provide can be linked to you. In addition, the records of this study will be kept private and confidential.

Compensation

We will not be able to pay you for your time, but will we give you a drink and biscuit at the end of the interview.

Contacts for Additional Information

Any concerns or questions you may have about this study or your participation in the study, before or after you consent, should be directed to Dr. Esi Colecraft colecrafft_s@hotmail.com or +233 244 107 633) or Gloria Aba Aryee (ampaabagh@yahoo.com or +233 243 089 522).

Your rights as a Participant

If you have any questions about your rights as a research participant you can contact the IRB Office between the hours of 8am-5pm through the number 0302916438 or email addresses: nirb@noguchi.mimcom.org or HBaidoo@noguchi.mimcom.org . You may also contact the chairman, Rev. Dr. Ayete-Nyampong through mobile number 0208152360 when necessary.

VOLUNTEER AGREEMENT

The above document describing the purpose and procedures for the research title “Consumer Awareness and Use of Nutrition Information on Food Labels” has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

Date

Signature or thumb print of volunteer

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

Date

Signature of Person Who Obtained Consent

APPENDIX II

UNIVERSITY OF GHANA
DEPARTMENT OF NUTRITION AND FOOD SCIENCE

**Awareness and Use of Nutrition Labels
on Pre-Packaged Foods among Consumers in Accra**

Supermarket's code 1.Shoprite 2. Melcom Plus

Subject's code.....

SPCODE

SECTION A: Background characteristics of participants

SUBCODE

1. Sex 1. Male 2. Female

SEX

2. Where do you live?

RESIDENC

3. How old are you? (completed years).....

AGE

4. Which ethnic group do you belong to?

1. Akan 3. Ga-Adangbe 5. Foreigner
2. Ewe 4. Northern Ethnicity 6. Others
(specify).....

ETHNIC

5. What is your level of formal education?

1. None 4. SHS/SSS 7. Certificate/Diplomat
2.Primary sch. 5.Vocational Sch. 8.Degree
3. JHS/Middle sch. 6.Technical Sch. 9.Postgraduate degree

FORMEDU

6. What is your marital status?

1. Single 3. Divorced 5. Separated
2. Married/Co-habiting 4. Widowed 6. Others
(specify).....

MARITAL

7. How many people are in your household?

HHSIZE

8. How many of the people in your household are children less than 18yrs?.....

HHCHILD

9. What is your household composition?

1. Single parent with children 3. Couple with no children
2. Couple with children 4.other (specify).....

HHCOMP

10. What is your employment status?

1. Unemployed 3.Student 5.Employed (employee) 7.Clergy
2. Self-employed 4. Retired 6. Homemaker

EMPLOY

11. What is your average monthly income (GH¢)(from all sources)?

1.Less thanGH¢100 3. GH¢501-GH¢1000 5. GH¢1500 - GH¢2000
2. GH¢101- GH¢500 4. GH¢1001-GH¢1500 6. More than GH¢2000

INCOME

12. Do you have any of the following health conditions (*tick all that apply*)?

HPROBLM

	Yes	No
Food Allergy/Intolerance		
Diabetes		
Cancer		
Hypertension		
High cholesterol		
Dental problems		

	Yes	No
Obesity		
Gout		
Kidney Disease		
Ulcer		
Others(specify)		

13. Do you have a family history of any of the above health conditions?

FHPROBLM

1. Yes 2. No 3. Don't know

14. If yes, state

15. How do you perceive your current weight status?

1. I am satisfied with my weight 3. I wish I could gain a little weight
2. I wish I could lose a little weight 4. Don't know

CWEIGHT

16. Are you on a special diet prescribed by a doctor or nutritionist/dietitian for a health condition?

1. Yes 2. No

SPDIET

SECTION B: Food and Nutritional label awareness

17. What is your **main source** of nutrition information (*tick only one response*)?

MAINUTR

1. Television 4. Books and magazines 7. Internet
2. Radio 5. Nutritionist/dietician 8. Family and Friends
3. Newspapers 6. Other health professionals 9. Others (specify)

18. Are you aware that some pre-packaged foods carry a food label?

CARRYLB

1. Yes 2. No

19. Have you ever noticed/seen the food label on any pre-packaged food?

NOTICELB

1. Yes 2. No

20. Are you aware that some food labels contain nutrition information about the food?

AWARNUTR

1. Yes 2. No

21. Have you ever noticed/seen the nutrition information on any pre-packaged food?

NOTICENIP

1. Yes 2. No

22. How would you rate your level of understanding of the nutrition information provided on food Labels?

RATENIP

1. High 2. Moderate 3. Low

If you answered ‘Yes’ to any of the questions 18-21 then complete section C

If you answered ‘No’ to questions 18-21 then skip section C

SECTION C: Food and nutrition label use

23. Do you ever read food labels on pre-packaged foods that you buy?

1.No, never 2.Yes, sometimes 3.Yes,often

READLBUY

24. a] *If you answered ‘sometimes’ or ‘often’ to Q-23, What information are you most likely to look out for when you read/look at a food label (tick all that apply)?*

LOOKINFO

Country of origin	
Brand name	
Manufacture Date	
Expiry Date	
Additives	
Nutrition/health claims	
Description of the Food	
Nutrition Information	
List of Ingredients	
Others(specify)	

b] *If you answered ‘Never’ to Q23, Why not?.....*

READNUTR

25. Do you ever use **nutrition information** on food labels on the pre-packaged foods that you buy?

1.No, I never do 2.Yes, sometimes 3.Yes, often

26. If ‘Never’ to Q25, what is your main reason for not using the nutrition information on pre-packaged foods that you buy?.....

27. *If you answered ‘sometimes’ or ‘often’ to Q-25, what is your main reason for using the nutrition information on pre-packaged foods that you buy?.....*

LOOKLB

28. What information are you **most likely** to use when you read or look at a nutrition label?
(Tick all that apply)

Total Energy (total calories)	
Carbohydrate	
Protein	
Fats	
Vitamins and minerals	
Cholesterol	
Fibre	
Saturated Fats	
Sugars	
Sodium/salt	
Others(specify)	

DECIDELB

29. How does reading nutrition labels help you when deciding on what pre-packaged foods to buy ?(tick only one response)

- 1.To distinguish between different products
- 2.To help avoid some nutrients
- 3.To select foods which contain nutrients they need
- 4.To help them to compare the nutrient content of different products
5. Others (specify).....

CIRCUMLB

30. Under what circumstances do you usually use the nutrition information provided packaged foods?
(tick only one response)

1. All circumstances
2. When buying a new product
3. When buying a new version of an existing product
4. Others (specify).....

CARRYFLB

SECTION D: Interviewee Opinions Questions

31. Do you think it is necessary for pre-packaged foods to carry a food label with nutrition information?

1. Yes 2. No 3. Don't know

32. Why 'Yes' or 'No'?

.....

Please, feel free to make any comments that you think have not been captured in this interview

33. Do you ever buy any of the following?	Yes	No	How likely are you to use the nutrition label before buying this item?		
			Not likely	Quite likely	Very likely
BEVERAGES					
Alcoholic Beverages (e.g canned beer, alcoholic wine)					
Non-alcoholic beverages (malt drink, soya milk, soft drinks)					
Fruit drinks/fruit juice/flavored drinks					
Breakfast beverages (Tea,coffee,milo)					
FRUITS AND VEGETABLES					
Frozen vegetables (e.g. peas, mixed vegetables, carrots etc.)					
Canned Vegetables (e.g baked beans,canned green peas)					
Tomato products (e.g tomatoes past/puree/sauce, etc.)					
Canned salads (e.g vegetable salad, fruit salad)					
MEAT/FISH PRODUCTS					
Canned meats/fish (eg. corned beef, luncheon meat, tuna etc)					
Other processed meats (sausage, salami, ham etc.)					
CEREAL AND CEREAL PRODUCTS					
Ready-to-eat breakfast cereals (e.g. cornflakes, wheetabix etc.)					
Other breakfast cereals (e.g. oats, Tom-Brown etc)					
Dry pasta(e.g.(spaghetti, macaroni)					

SPREADS AND SALAD DRESSINGS					
Jams/jellies(e.g orange jam, pineapple jam, mango jam)					
Mayonnaise/salad cream/vinaigrette/other salad dressing					
Other (e.g butter/margarine, peanut butter, chocolate spread)					
DAIRY PRODUCTS					
Fresh or canned milks, yogurts, cheeses, ice-creams etc.					
OTHER PRODUCTS					
Frozen foods/meals (potato chips, samosa, pizzas)					
Biscuits and crackers					
Nuts(e.g peanuts)					
Oils (e.g sunflower oil,olive oil,soya oil,canola oil)					
Processed roots and tubers (e.g fufu powders, yam flour etc.)					

