KNOWLEDGE, PERCEPTION, ATTITUDE AND USE OF FOOD LABELLING INFORMATION AMONG UNDERGRADUATE STUDENTS OF THE UNIVERSITY OF IBADAN, OYO STATE, NIGERIA

BY

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DEDICATION

To GOD Almighty and our saviour Jesus Christ, for keeping me throughout the MPH programme and for giving me the grace and courage to execute this work successfully, I am grateful Lord.

To my parents, family members and my wonderful children and supporting husband, I say a big thank you.

ABSTRACT

The inappropriate and non use of food labels that are supposed to inform the consumer and help sell food products have contributed immensely to the rising prevalence of overweight and obesity globally, especially in Nigeria where there is rising number of Non Communicable Diseases related deaths constituting major threat to the public health status of the citizenry. The high circulation of misleading and misrepresentation of food nutritional information has added to the burden of diet disorders in the society and have caused serious health challenges in the nation with overweight, obesity and diabetes on top of the list. This study was conducted to investigate the knowledge, perception, attitude and use of food labelling information among undergraduate students of the University of Ibadan, Oyo state, Nigeria.

The study was a descriptive cross-sectional survey which used a four-stage sampling technique to recruit 422 respondents from the target population of undergraduate students in the University of Ibadan. A semi-structured interviewer-administered questionnaire was used to elicit information on respondents' socio-demographic characteristics, knowledge, perception, attitude and use of food labelling information.Majority (68.0%) of the respondents had good knowledge, perception of food label, attitude towards food labelling information and the practice of respondents.

Knowledge was assessed on a 34-point scale and scores (KS) of 0-14, 15-24, and 25-34 were categorised as poor, fair, and good knowledge scores respectively. A 12-point scale was used for the perception 0-6= poor, and 7-12= good perception. The attitude was measured on a 9-point scale with 0-5 =poor and 6-9 =good attitude. The use of food labelling information was assessed on a 24-point scale with score of 0-12 =poor, and 13-24 representing good use of food label.

More than half (55.7%) were males. The mean age of respondents was 21.3 ± 3.2 years . More (32.9%) of the respondents were 100 level students , majority (80.8%) of the respondents were of the Yoruba ethnic group. The mean knowledge score was 25.6 ± 4.5, majority (68.0%) of the respondents had good knowledge. The mean perception score was 7.6 ± 2.1 points, majority (73.9%) of the respondents had good perception. The mean attitude score was 5.6 ± 2.2 points, majority (73.9%) of the respondents had good attitude. Majority (73.1%) reported that they use food labelling information while, the proportion that do not use food labels attributed their reasons to; small print (16.0%), not interested (18.1%), don't believe it (12.8%) and no time (12.8%). Inferential statistics showed that there was a significant association between the use of food labels and; knowledge((p=0.000)),the use of food labels and perception((p=0.000)) and an association between use of food labels and attitude (p=0.000).

The findings of this study indicates that the overall knowledge, attitude and use of the food label was good, however, some gaps exits in the understanding of some information gotten from the food label and a poor perception of expiry date which is dangerous to their health. There is need to sensitize the university students on the benefits of utilizing information on food labels by introducing nutritional education as a part of the GIS curriculum in order to expand their nutrition knowledge in selecting healthy food choices both at schools and outside towards preventing eating disorders.

Keywords: Food label, Knowledge, Attitude, Perception, and Use.

Word count: 520

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Egbekunle, Kikelomo.

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CERTIFICATION

I hereby certify that this research work was carried out by EGBEKUNLE KIKELOMO OLUWAFISAYO in the Department of Health Promotion & Education, Faculty of Public Health, College of Medicine, University of Ibadan.

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LIST OF TABLES

LIST OF ABBREVIATION

kcal	kilocalories
kJ	kilojoules
NAFDAC	National Agency for Food Drug and Control
NCDs	Non-communicable diseases
NFT	Nutrition Facts table
TRA	Theory of Reasoned Action

CHAPTER ONE

INTRODUCTION

1.1 Background

The aim of food labelling is to provide consumers with information which may influence their purchasing decisions. For example, consumers may want to know what ingredients are in a food product, how to cook it, how it should be stored, its best-before or use-by date, its fat content or other nutritional properties. Detailed, honest and accurate labelling is essential to inform the consumer as to the exact nature and characteristics of the food product, enabling them to make a more informed choice.

During the last two decades, food product labelling has become a popular policy tool, particularly with respect to the provision of nutrition and health information, nutrition labelling is a valuable tool in learning how to apply nutrition information in a practical way. The purpose of nutrition labelling is to provide information on food products to reinforce healthy eating practices and support consumers in their efforts to improve their food choices. Nutrition labels provide information about the number of kilocalories and the amount of proteins, carbohydrates, fat, and certain other nutrients in a food (Sloan, 2006). It is essential for consumers to know about the nutrition information because it can help them to choose healthier food and to avoid contents or ingredients that they are allergic to and prevent Non Communicable Diseases like diabetes, obesity, cancer. Consumers need to know what nutritional contents of foods are so they can purchase foods of better nutritional quality. Education on nutrition labelling is one component of a comprehensive nutrition education programme. It is important that consumers have basic nutrition knowledge first, before appreciating nutrition labelling. A health-conscious shopper may use the percentages shown on the label to determine how well each serving of food fulfils recommended nutritional requirement. For companies competing in the global food and beverage marketplace, understanding local consumer attitudes and purchase behaviour regarding healthy foods, nutrition, and labelling is critically important for success (Food Standards Australia and New Zealand 2004).

In Ireland, the general rules for the labelling of pre-packaged foods are laid out in the European Communities (Labelling, Presentation, and Advertising of Foodstuffs) Regulations, 2002 (as amended). The fundamental rule of the labelling legislation is that consumers should not be misled to a material degree. Food label is any tag, brand, mark, pictorial or other descriptive matter, written, printed, stencilled, marked, embossed or impressed on, or attached to, a container of food. It is the primary means of communication between the producer and seller of food on one hand, and the purchaser and consumer on the other. Nutrition label, one of important aspect of food labels, is a panel found on a package of food which contains a variety of information about the nutritional value of the food item; including serving size, number of calories, grams of fat, included nutrients, list of ingredients. This information helps people who are trying to restrict their intake of certain nutrients, or those individuals who are trying to get enough of the healthy nutrients. Other information that are contained on food labels include expiry date, name and address of manufacturer, country of origin and instruction for use (FAO, 2007).

Food labels are used to inform the consumers and help sell the food products (Cheftel, 2005). The food label was necessary to facilitate informed choices or to prevent false, misleading or unreliable conduct (Rumble, Wallace, Deeps, McVay and Curran 2003). There are many factors being considered during buying food products such as packaging, price, taste, nutritional content and expiry date. "In some cases, consumers do not read the claims carefully or transfer the meaning from a familiar food label to an unfamiliar one, potentially leading to over-generalisation and inaccurate conclusions (Draper, Adamson, Cleggs, Malam, Riggs,and Duncan 2011; Fullmer, Geiger, and Parent, 1991). Some consumers search for additional information on a food package to help them relate the claim to their earlier knowledge and experiences (Svederberg and Wendin, 2011), while others find reading food labels time-consuming and strenuous (Signal, Lanumata, Robinson, Tavila, Wilton and Mhurchu 2008; Zezelj et al., 2012). On the other hand, several problems do occur regarding the uses of food label, for instance, some consumers do not understand food label information well enough to make healthy food choices (Pelletier *et al*., 2004).

Research has found that highly educated people are more likely to use food labels (Blitstein and Evans, 2006). Other than that, according to Hiew *et al*. (2010) respondents with at least a

diploma had an extensively better level of knowledge of Nutrition Information Panel than those with a primary level education and better in food choices.

Several studies have focused on use of food labels in developed countries (Aygen, 2012; Grunert, 2007; Grunert et al., 2010; McLean-Meyinsse, 2001; Mhurchu and Gorton, 2007; Ollberding et al., 2010). However, such studies are either scanty or non-existent in developing countries, including Nigeria. This is a research gap which this study intends to fill. An understanding of food labelling information use is important to influence dietary choices and food outcomes. Nielsen's 2011 Global Survey of more than 25,000 Internet respondents in 56 countries shows that 59 percent of consumers around the world have difficulty understanding nutritional labels on food packaging.

1.2 Problem Statement

A lot of effort has been put into the regulation of packaged food in different countries of the world, Nigeria included. This attention on the sector has led to increased demands on producers of packaged food to correctly state and specify the exact ingredients and in their correct proportions that come together to make up the product. This nutritional information is now available on the packages of all approved and duly registered packaged food in Nigeria, available also according to industry standard regulations and duly monitored by the National Agency for Food and Drug Administration and Control in Nigeria (NAFDAC).

Nutritional information's availability is one thing, getting the final consumer to factor it into making purchase decisions is another. Despite the availability of guidelines for product ingredient labelling, most consumers make purchases without taking the offered information into account and in cases where an attempt is made to read the nutritional label, some consumers are faced with an intellectual brick wall, as the language of data presentation is more complex than what the average shopper can follow. The consumer may not be able to easily comprehend the nutrition information represented in form of percentage and in some cases such information has little information on possible allergies and the possibility of contributing to NCDs like obesity, diabetes and cancer among others. There has also been reports of expired food products being wrongly labelled for the purpose of personal profits thus, endangering the lives of the food consumers.

This research work aims to take an in-depth look at consumer knowledge, understanding and attitude towards food labelling on packaged goods in Ibadan with a view to discovering why consumers do not consult product labels and proffering communication solutions to ensure a healthier purchasing culture in our tertiary institutions. However, there is dearth of literature on the prevalence of food label use in Nigeria.

1.3 Study Justification

Food labels are used to inform the consumer and help sell the food products (Cheftel, 2005). The food label was necessary to facilitate informed choices or to prevent false, misleading or unreliable conduct (Rumble *et al.*, 2003). There are many factors being considered during buying food products such as packaging, price, taste, nutritional content and expiry date. "In some cases, consumers do not read the claims carefully or transfer the meaning from a familiar food label to an unfamiliar one, potentially leading to over-generalization and inaccurate conclusions (Draper et al., 2011; Fullmer, Geiger, and Parent, 1991). Therefore, this study is to help the public against misleading and misrepresentation which often time have been a menace in the society and have caused serious health challenges in the nation particularly the Non Communicable Diseases such as overweight, Obesity diabetes among others. This study will help the experts in the field of nutritionist, science laboratory, the health personnel and standard organization of the country which will go a long way in preventing some of the preventable diseases that has claimed lives of thousands due to lack of reading of the labelling on the goods purchased.

Research Questions

1. What is the level of knowledge related to food labelling information among undergraduate students in the University of Ibadan?
2. What is the perception of undergraduate students towards food labelling information in the University of Ibadan?
3. What is the attitude of undergraduate students towards food labelling information in the University of Ibadan?
4. What is the reported use of food labelling information among undergraduate students in the University of Ibadan?

1.6 Broad objective

The broad objective for this research work is to investigate the knowledge, attitude and use of food labeling information among undergraduate students of the University of Ibadan, Oyo state, Nigeria.

1.7 Specific objectives

The specific objectivesof this study are to:

1. Assess the level of knowledge related to food labelling information among undergraduate students in the University of Ibadan
2. Determine the perception of undergraduate students towards food labelling information in the University of Ibadan
3. Determine the attitude of undergraduate students towards food labelling information in the University of Ibadan
4. Determine the reported use of the nutritional information on food labels in the University of Ibadan

1.8 Hypotheses

1. There is no significant relationship between socio-demographic characteristics and use of food labelling information
2. There is no significant relationship between knowledge and use of food labelling information
3. There is no significant relationship between attitude and use of food labelling information
4. There is no significant relationship between perception and attitude towards food labelling information

CHAPTER TWO

2.1 LITERATURE REVIEW

Overview of food label

General overview

Nutrition labelling is an important policy tool that provides consumers with information that can assist them in making healthy food choices. Components of nutrition labelling include the Nutrition Facts table (NFT), the list of ingredients, nutrient content claims and health claims. (Drenowski, Maskowitz, Reisner and Krieger, 2010). For companies competing in the global food and beverage marketplace, understanding local consumer attitudes and purchase behaviour regarding healthy foods, nutrition, and labelling is critically important for success.

Food labelling is a valuable tool in learning how to apply nutrition information in a practical way. It is found to be a very important public health tool aimed at providing consumers with information which may influence their purchasing decisions (Vijaykumar, Lwin, Chao, Au 2013). For example, consumers may want to know what ingredients are in a food product, how to cook it, how it should be stored, its best-before or use-by date, and its fat content or other nutritional properties. Detailed, honest and accurate labelling is essential to inform the consumer as to the exact nature and characteristics of the food product, enabling them to make a more informed choice. Nutrition- related health problems, such as obesity, high blood pressure, diabetes, cancers, osteoporosis and cardiovascular diseases, have a marked impact in developed and developing societies (FAO/WHO. Diet, 2003).

Food label is any tag, brand, mark, pictorial or other descriptive matter, written, printed, stencilled, marked, embossed or impressed on, or attached to, a container of food. It is the primary means of communication between the producer and seller of food on one hand, and the purchaser and consumer on the other. Nutrition label, one of important aspect of food labels, is a panel found on a package of food which contains a variety of information about the nutritional value of the food item; including serving size, number of calories, grams of fat, included nutrients, list of ingredients. This information helps people who are trying to restrict their intake of certain nutrients, or those individuals who are trying to get enough of the healthy nutrients. Other information that are contained on food labels include expiry date, name and address of manufacturer, country of origin and instruction for use (FAO, 2007)

Food labels are used to inform the consumer and help sell the food products (Cheftel, 2005). The food label was necessary to facilitate informed choices or to prevent false, misleading or unreliable conduct (Rumble *et al.*, 2003). There are many factors being considered during buying food products such as packaging, price, taste, nutritional content and expiry date. "In some cases, consumers do not read the claims carefully or transfer the meaning from a familiar food label to an unfamiliar one, potentially leading to over-generalisation and inaccurate conclusions (Draper et al., 2011; Fullmer, Geiger, and Parent, 1991). Some consumers search for additional information on a food package to help them relate the claim to their earlier knowledge and experiences (Svederberg and Wendin, 2011), while others find reading food labels time-consuming and strenuous (Signal et al., 2008; Zezelj et al., 2012). On the other hand, several problems do occur regarding the uses of food label, for instance, some consumers do not understand food nutrition label well enough to make healthy food choices (Pelletier *et al.*, 2004).

Research has found that high education people more likely to use food labels (Blitstein and Evans, 2006). Other than that, according to Hiew *et al.* (2010) respondents with at least a diploma had an extensively better level of knowledge of Nutrition Information Panel than those with a primary level education and better in food choices.

Several studies have focused on use of food labels in developed countries (Aygen, 2012; Grunert, 2007; Grunert et al., 2010; McLean-Meyinsse, 2001; Mhurchu& Gorton, 2007; Ollberding et al., 2010). However, such studies are either scanty or non-existent in developing countries, including Nigeria..This is a research gap which this study intends to fill. An understanding of food label use is important to influence dietary choices and food outcomes. Nielsen's 2011 Global Survey of more than 25,000 Internet respondents in 56 countries shows that 59 percent of consumers around the world have difficulty understanding nutritional labels on food packaging.

2.2 Components of food labels

The following information are mandated by the World Health Organisation to appear on the label of pre packaged food.

1. ***The name of the food***

This indicates the true nature of the food and normally be specific and not generic. Where a name or names have been established for a food in a Codex standard, at least one of these names must be used. In other cases, the name prescribed by national legislation must be used. In the absence of any such name, either a common or usual name existing by common usage as an appropriate descriptive term which was not misleading or confusing to the consumer shall be used. A "coined", "fanciful", "brand" name, or "trade mark" may be used provided it accompanies one of the names established in codex standard. There shall appear on the label either in conjunction with, or in close proximity to, the name of the food, such additional words or phrases as necessary to avoid misleading or confusing the consumer in regard to the true nature and physical condition of the food but not limited to the type of packing medium, style, and the condition or type of treatment it has undergone; for example: dried, concentrated, reconstituted, smoked.

1. List of ingredients

Except for single ingredient foods, a list of ingredients must be declared on the label. The list of ingredients shall be headed or preceded by an appropriate title which consists of or includes the term 'ingredient'. All ingredients shall be listed in descending order of ingoing weight (m/m) at the time of the manufacture of the food. Where an ingredient is itself the product of two or more ingredients, such a compound ingredient may be declared, as such, in the list of ingredients, provided that it is immediately accompanied by a list, in brackets, of its ingredients in descending order of proportion (m/m). Where a compound ingredient (for which a name has been established in a Codex standard or in national legislation) constitutes less than 5% of the food, the ingredients, other than food additives which serve a technological function in the finished product, need not be declared.

2. Net contents and drained weight

The net contents shall be declared in the metric system ("Systeme International" units). The net contents shall be declared in the following manner:

(i) for liquid foods, by volume;

(ii) for solid foods, by weight;

(iii) for semi-solid or viscous foods, either by weight or volume.

In addition to the declaration of net contents, a food packed in a liquid medium shall carry a declaration in the metric system of the drained weight of the food. For the purposes of this requirement, liquid medium means water, aqueous solutions of sugar and salt, fruit and vegetable juices in canned fruits and vegetables only, or vinegar, either singly or in combination.

3. Name and address

The name and address of the manufacturer, packer, distributor, importer, exporter or vendor of the food shall be declared.

5. Country of origin

The country of origin of the food shall be declared if its omission would mislead or deceive the consumer. When a food undergoes processing in a second country which changes its nature, the country in which the processing is performed shall be considered to be the country of origin for the purposes of labelling. When a food additive undergoes processing in a second country which changes its chemical or physical nature, the country in which the processing is performed shall be considered to be the country of origin for the purposes of labelling.

6. Lot identification

Each container shall be embossed or otherwise permanently marked in code or clear to identify the producing factory and the lot.

7. Date marking and storage instructions

If not otherwise determined in an individual Codex standard, the following date marking shall apply:

(i) The "date of minimum durability" shall be declared.

(ii) This shall consist at least of:

• the day and the month for products with a minimum durability of not more than three months;

• the month and the year for products with a minimum durability of more than three months. If the month is December, it is sufficient to indicate the year.

(iii) The date shall be declared by the words:

• "Best before ..." where the day is indicated;

• “Best before end ...” in other cases.

(iv) The words referred to in paragraph (iii) shall be accompanied by:

• either the date itself; or

• a reference to where the date is given.

(v) The day, month and year shall be declared in encoded numerical sequence except that the month may be indicated by letters in those countries where such use will not confuse the consumer.

(vi) Not withstanding an indication of the date of minimum durability shall not be required for:• fresh fruits and vegetables, including potatoes which have not been peeled,cut or similarly bakers’ or pastry-cooks’ wares which, given the nature of their content, are normally consumed within 24 hours of their manufacture;• vinegar;• food grade salt;• solid sugars;• confectionery products consisting of flavoured and/or coloured sugars;•chewing gum.In addition to the date of minimum durability, any special conditions for the storage ofthe food shall be declared on the label if the validity of the date depends thereon.

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8. Instructions for use

Instructions for use, including reconstitution, where applicable, shall be included on the label, as necessary, to ensure correct utilization of the food.

9. Nutrition labelling

Chopera, Chagwena and Mushong, (2014) have shown in their study conducted in Zimbabwe that the typical components of nutrition panel in food labels are; Energy, Protein, Carbohydrate, sugars, Total fat, cholesterol, total dietary fiber, sodium, calcium

The declaration of nutrition information on the label shall include ;

(a) the amount of energy per 100 grams or 100 ml of the food as sold and where appropriate per specified quantity of the food as suggested for consumption, expressed in kilocalories (kcal) and kilojoules (kJ).

(b) The number of grams of protein, available carbohydrate and fat per 100grams or 100 ml of the food as sold and where appropriate per specified quantity of the food as suggested for consumption.

(c) The total quantity of those specific nutrients or other components which provide the characterizing essential feature for the special dietary use for which the food is intended per 100

grams or 100 ml of the food as sold and, where appropriate, per specified quantity of the food as suggested for consumption.

Requirement for presentation of information on food label

Statements required to appear on the label by virtue of this standard or any other Codex standard shall be clear, prominent and readily legible by the consumer under normal conditions of purchase and use. Such information shall not be obscured by designs or by other written, printed or graphic matter and shall be on contrasting ground to that of the background. The letters in the name of the food additive shall be in a size reasonably related to the most prominent printed matter on the label. Where the container is covered by a wrapper, the wrapper shall carry the necessary information, or the label on the container shall be readily legible through the outer wrapper or not obscured by it. In general the name and net contents of the food additive shall appear on that portion of the label normally intended to be presented to the consumer at the time of sale.

Legislations relating to food labels

The primary functions of food labelling regulation is to protect the end consumer by offering them the privilege of knowing what they are buying, in light of challenges of choice pose by ever increasing variety of products coupled with sophisticated and complex collection of packaging and labelling information(Azila-Gbettor, Avorgah and Adigbo, 2013). The labelling of foods in most countries is subject to regulations. These regulations prevent false advertising and assist in promoting food safety. A nutrition panel on a food label is required on all packaged foods in most countries (Chopera, Chagwena and Mushong, 2014).

Evidence from studies has suggested that, an significant way to get people to make healthy food choices would be to educate them to read and use food labels by enforcing standard food labelling laws on the manufacturing companies. Internationally, food labeling has effectively achieved healthier consumer consumption behaviour and product development which transcends into improved health outcomes (Susannah, 2011).

Darkwa (2014) stated that policies help to enforce rigorous guidelines pertaining to food labelling is an essential way of presenting good nutrition information to people. Some countries in Africa, like South Africa took bold steps to publish food labelling legislation in 2010 (Kempen, Muller, Symington and van Eeden, 2012). Chopera et al also stated that in a country

like Zimbabwe, food labelling is governed by the Food and Food Standards Act 15:04 and Regulations of 2002.

Implication of food labels to health

A wide range of studies have examined the association between label use and health practices. Individuals with healthier eating habits report greater use of nutrition labels, either as a result of personal preference (Satia, Galanko & Neuhouser (2005); or because of the requirements of a health-related diet (Mannell, Brevard, Nayga et al 2006). Greater use has also been reported by individuals more concerned with dietary guidelines (Drichoutis, Lazaridis & Nayga (2005) and by those who place greater emphasis on the nutritional quality of food while shopping (Lin & Yen 2008). Nutrition and label knowledge (Fitzgerald, Damio, Segura-Pe´rez S et al. 2008), nutrition education and knowledge of diet disease relationships (Smith, Taylor & Stephen 2007) or of specific diseases have also been associated with label use, with few exceptions (Misra 2007) and diagnosis of a disease (Variyam & Cawley 2006) have also been associated with greater label use.

Food labelling has been found to be very vital in public health in that it helps in the provision of information for food consumers. This is expected to influence their purchasing decisions and they will be better equipped to know what is right for their health (Vijaykumar, Lwin, Chao and Au, 2013). Nutrition-related health problems which are mostly non-communicable diseases, such as obesity, high blood pressure, diabetes, cancers, osteoporosis and cardiovascular diseases, have a marked effect in developed and developing societies. The risk of non-communicable diseases (NCDs) may be reduced by following a “healthy” diet with an emphasis on the reduction of the intake of dietary fat, saturated fatty acids, trans fatty acids and cholesterol (FAO/WHO,). As consumers are becoming increasingly aware of the relationship between diet and disease; their demand for nutrition information increases (Washi, 2012).

Klaus, Wills and Ferna´ndez-Celemı´n (2010) in their study among consumers in United Kingdom showed that usage of packaged food products is mainly related to interest in healthy eating while understanding of nutrition information on food labels is mainly related to nutrition knowledge. They also showed that both components are influenced by demographics of individuals. Similarly, a study conducted in Kwara state, Nigeria has also revealed that females are more willing to read food labels than males. Moreover, willingness to read food labels is positively influenced by level of nutritional knowledge of food planners, age of food consumer,

household income level and educational status of food planner. It however declines with household size and number of preschool children. (Falola, 2012). On one of the methods to manage lifestyle diseases such as obesity, Arsenault (2010) opined that one approach is to educate the public about nutrition and the nutritional components of the food they purchase. One of the ways to achieve this is the nutrition labeling of pre-packaged foods as this is designed to provide the public with information to make informed choices about food purchases.

Food labels have also been regarded as important especially in the quest to achieve nutrition security, which involves ensuring a good nutritional outcome (Adeniyi et al., 2011). This is moreso important given the fact that about 29% of Nigerian population are said to be chronically undernourished and this translates to about 5.4% of the total undernourished people in Sub-Saharan Africa as a whole (Adeniyi et al, 2011; FAO, 2005).

Health claims on food labels are intended to communicate scientifically proven health benefits associated with consuming a particular food (Williams, 2005), for example, "low fat diets rich in fiber may reduce the risk of some types of cancer." One goal of nutrient content claims is to communicate the value or relative amount of a specific nutrient within a food product (e.g., good source of fiber, fat free, low calorie). Claims have been shown to impact how other food label information is processed and to influence other dietary behaviours (Mathios & Ippolito, 1999; Williams, 2005). For example, consumers sometimes use claims in place of Nutrition Facts panels (NFPs) (Labiner-Wolfe, Jordan Lin, & Verrill, 2010). On the other hand, claims sometimes have little impact on product evaluations (Garretson & Burton, 2000) and may even be misleading and confusing however, claim comprehension is found to be higher among those with greater experience and education (Dean, Lähteenmäki, & Shepherd, 2011; Verbeke, Scholderer, & Lähteenmäki, 2009).

Findings from research by Kempen (2011) on food label influence on South African consumers purchasing behaviour suggested that respondents evaluate product quality, personal benefits, health attributes and nutritional values from reading food labels (Kempen, Bosman, Bouwer, Klein and van der Merwe 2011).

Knowledge of food labels

Knowledge is formed through interaction with the surroundings where individuals themselves construct their understanding of the world through experience. Its exchange is an

integral part of learning as well as helping the individual to shape his or her abilities by converting theoretical and practical skills into new knowledge. Human knowledge is mostly acquired through communication and its processes. Knowledge is the key to prevention and education is the key to knowledge. As consumers are becoming increasingly aware of the relationship between diet and disease; their demand for nutrition information increases (Washi, 2012).

Review of consumer research studies on food labelling (Grunert, Willis, 2007) showed that a range of them have been focused on these question whether consumers notice to such labels, whether they read and understand them, whether they use them when shopping for food. Studies have shown that various factors, ranging from demographic to attitudinal and product related, affect food label use. Some studies have indicated that food label use decreases with age (Nayga, Consum, 2000). However, some other researchers have demonstrated the reverse (Marjan, Mostafa and Zohreh 2015). Furthermore, nutritional information search is positively associated with education, so that individuals with higher education are more likely to read food labels than those with lower education (Mahgoub, Lesoli, Gobotswang 2007). Evidence suggests that males are less likely to use nutritional labels than females (McLean-Meyinsse.2001). This may result from the fact that many males do not agree that nutritional information is useful, that the information can help in food choice, or that health is a matter of importance to them. In addition to demographic factors, nutritional knowledge plays a key role in the food label use. Previous studies have reported a positive relationship between knowledge and label use (Kim, Nayga, Capps.2001). Even though Nayga found no evidence supporting this relationship. It may facilitate label use by increasing its perceived benefits or by increasing motivation to seek more health information. Other possible barriers to the effective use of food label include a negative attitude toward food labels a lack of trust and growing scepticism about food label information and a low perception of importance of this information. Even though Nayga found no evidence supporting this relationship. It may facilitate label use by increasing its perceived benefits or by increasing motivation to seek more health information. Other possible barriers to the effective use of food label include a negative attitude toward food labels a lack of trust and growing scepticism about food label information and a low perception of importance of this information (Kristal, Levy, Patterson, Li and White 1998).

Perception towards food labels

Many consumers have reported that nutrition labels are an important source of information (Smith, Taylor & Stephen. 2007) although ingredients and health claims may be perceived as more important, most consumers were willing to use information if it was provided on the label (Hess, Yanes, Jourdan et al. 2005 although consumers' beliefs about the healthiness of foods did not necessarily depend on information on the label (Hess, Yanes, Jourdan. 2005). There was, however, popular support for mandatory labelling in studies, although conflicting findings have been found for consumers' willingness to pay extra for nutrition information

Attitude towards food labels

Atkinson and Hilgard et al (2003) defined attitude as the favourable or u reaction to objects, people, situations or other aspects of the world. Other social psychologists considered attitudes to include factors such as cognition, affection and behaviour. They further explained the cognition aspect of a person to mean a person's knowledge of something, the affective component represents an individual's feelings and evaluations that influence the standpoint for or against something and the behavioural aspect to be, the way people act towards a situation or a person and the motivation to make changes. Attitudes as suggested by psychologist are formed through experiences in lifetime and are usually determined by beliefs and the evaluation of such beliefs. Attitudes formed by individuals in society can be comprehensive as well as unspecific.

Fishbein et al (1975) indicated that comprehensive attitudes are more stable and are usually strongly held by the owners therefore, very difficult if not impossible to be influenced as compared to unspecific attitudes. A person's behaviour can be predicted by using the strength and consistency of his or her attitude. In this regard, any intervention that is aimed at changing the behaviour of an individual must first of all have enough information about his or her attitudes and then employ methods that will help change these attitudes. Attitudes of which one is aware of or that are based on one's own experience can predict behaviour to a higher degree than attitudes that do not meet these criteria (Hilton, Patterson, Smith, Bedford, & Hunt, 2014).

Positive attitudes were higher among individuals reporting greater use of food labels (Misra (2007); however, negative attitudes were also prevalent in the literature (Tessaro, Rye, Parker et al.(2007). Many consumers believed that serving sizes and health claims were misleading and were sceptical of the compliance of labels to regulatory law (Misra, 2007). The credibility of

manufacturers 'health claims was rated poorly, especially when these claims contradicted nutrition information on the label (Tessaro, Rye, Parker et al.2007); however, in some cases, health claims helped consumers to choose more nutritious products. Trust in labels also predicted use (Smith, Taylor & Stephen, 2007), and was greater among younger respondents and among those with higher levels of education.

Usage of food labels

In a study conducted among 150 women, aged 25 to 45 years in Pietermaritzburg, South Africa it was shown that the female consumers who are most likely to use the nutrition information on the food label had a tertiary education; was a primary food purchaser; lived with other people; had more money per month to spend on food; and was conscious of choosing the healthier option. It was also revealed that the purchase of a selected fat spread was influenced by a number of variables reflecting health awareness, the selected fat spread's marketing, presentation and popularity, and familiarity with and cost awareness of the selected fat spread (Wiles, Paterson and Meaker 2009). In a cross sectional study was conducted on 320 adults both in urban and rural Zimbabwe, it was revealed that a high proportion (77.2%) of the respondents read food labels. Food label use however differed significantly by educational status, employment status and locality. It was further shown that less than half of the food label users understood the information on the food labels. More urban shoppers (86.1%) read food labels than their rural counterparts (66.7%) (Chopera, Chagwena and Mushong, 2014).

Additionally, a study by Kasapila and Shawa, (2011) in Malawi also discovered that 73.8% of the consumers do not understand the numerical information and terminology used in labelling Findings from the study suggest label reading is generally low among the respondents. A phenomenon that can be narrow down to low illiteracy rate in the country and most importantly, lack of citizens education on the benefits of reading label. However, in terms of gender distribution, females are better readers of labels than males (Azila-Gbettor, Avorgah and Adigbo 2013). In a study conducted among shoppers in Iran, the reasons given for not using food labels are as follows; small print on food, no interest, ignorance and do not understand (Bazhan , Mirghotbi and Amiri, 2015

CONCEPTUAL FRAMEWORK

The conceptual framework that will guide this study is the Theory of Reasoned Action (TRA). This theory is one of the intrapersonal models of Health Education. The model was developed to better comprehend the associations between attitudes, intentions, and behaviours (Fishbein, 1967). In the work that led to development of the TRA, Fishbein distinguished between attitude

toward an object and attitude toward a behaviour with respect to that object. Fishbein demonstrated that attitude toward a behaviour (for example, in this case attitude towards the use of food labels) is a much better predictor of that behaviour (using food labels) than attitude toward the object (good nutrition) at which the behaviour is directed

The Theory of Reasoned Action focuses on tenets which are majorly concerned with individual factors serving as determinants of the likelihood of performing a specific behaviour. TRA assume the best predictor of a behaviour is behavioural intention. Direct determinants of individuals' behavioural intention are their attitudetoward performing the behaviour and their *subjective norm* associated with the behaviour. This leads to the major constructs of TRA which are explained below.

The constructs of TRA

The major constructs of TRA are; (1) Attitude (2) Subjective Norm (3) Behavioural Intention (4) Behaviour.

Attitude

Attitude is a key construct of the TRA model. Fishbein and Ajzen (1975), have opined that attitude toward a certain act is "proposed to be a function of the act's perceived consequences and of their values to the person." Strong attitudes are a good predictor of a behaviour, as they are relatively stable over time, and unaffected by persuasion, especially when they are supported by chronically accessible beliefs (Ajzen, 2005). Attitude as a construct is made up of two components; a person's belief or perception that the behaviour will lead to certain outcomes and the value the individual places on those outcomes. Therefore, a person who holds strong beliefs that positively valued outcomes will result from performing the behaviour will have a positive attitude toward the behaviour and this will facilitate the performance of the behaviour. Meanwhile, an individual who has beliefs that negatively valued outcomes will result from the behaviour will have a negative attitude which may lead to the person not performing that behaviour.

Subjective Norm

Subjective norm refers to the beliefs of significant others in relation to the behaviour, i.e. social norm and pressure concerning a certain behaviour. Significant others may refer to the family or friends circle, colleagues from work, neighbours or the society as a whole. This particular construct just the attitude construct has two components which are individual's perception of a social norms and his or her motivation to comply with that perceived norm. For example, an

individual who believes that significant others think he/she should perform a behaviour and is motivated to comply will hold a positive subjective norm which will facilitate positive behavioural intention. This individual will most likely perform the behaviour.

Behavioural Intention.

This is regarded as the probability or likelihood that a person will perform a behaviour. It is an indication of how hard people are willing to try and of how much an effort they are planning to exert, in order to perform the behaviour. In the case of TRA, behavioural intention is influenced by two components which are the individual's attitude attitudetoward performing the behaviour, the perceived social pressure, called subjective norm. If the individual have good attitude and good perception of the subjective norm, then there is a good chance of the individual performing the behaviour.

Behaviour

Behaviour is what individuals do or fail to do that influence their health either positively or negatively. It is the endpoint of most theories or model. It is a single, observable action performed by an individual, or a category of actions with a specification of target, action, context, and time (Jack, Grim, Gross, Lynch and Mclin, 2010). It is the transmission of intention or subjective norm into action. A person who has good intention toward a behaviour will most likely perform that behaviour as against the person who does not have good behavioural intention.

Application of TRA to the study

Attitude

The attitude of individuals towards the use of food labels could be determined the beliefs of individuals about food labels and the value they place on that belief. For example, an individual who has a good perception of food labels and sees food labels as a vital channel for health information will likely have a good attitude towards the use of food labels. Meanwhile, if there is another individual who has poor or unfavourable perception of food labels and does not see substantial value attached to food labels, such individual will not have a good attitude towards the use of food labels. This construct has been used to design questions 27- 34 (see appendix 1)

Subjective Norm

Subjective norms in this case is the beliefs of significant others in respect to the use of food labels. Significant others such as friends and families influence the behavioural tendencies of individuals. For example, an individual who believes that significant others think he/she should use food labels and is motivated to comply with such belief will have positive subjective norm which will facilitate good intention towards the use of food labels. While an individual who believes that the significant others around him might not approve of him using food labels to make informed health decisions and is not even motivated to comply will not have a strong intention to use food labels eventually. This construct has been used to design questions 23, 25 and 32

Behavioural Intention

This is the main construct that determines the behaviour that individuals will eventually exhibit. Attitude of individuals and their subjective norms determine this construct. For example, if an individual has a good attitude towards the use of food labels and the perceived social pressure is good as well, there is every likelihood that the individual will be using food labels. This means the resulting behavioural intention will be good enough to make the decision which is the performance of the behaviour. This construct has been used to design question 37

Behaviour

As explained above, behaviour is the result of the whole process. It is the active presentation of all the other constructs. An individual who has a good behavioural intention toward the use of food labels will enventually use food labels. This final part woruld have been influenced in one way or the other by the other major contructs such as the attitude, subjective norms and

behavioural intention. This questions designed with this construct are questions 35, 38, 39, 40 and 41.

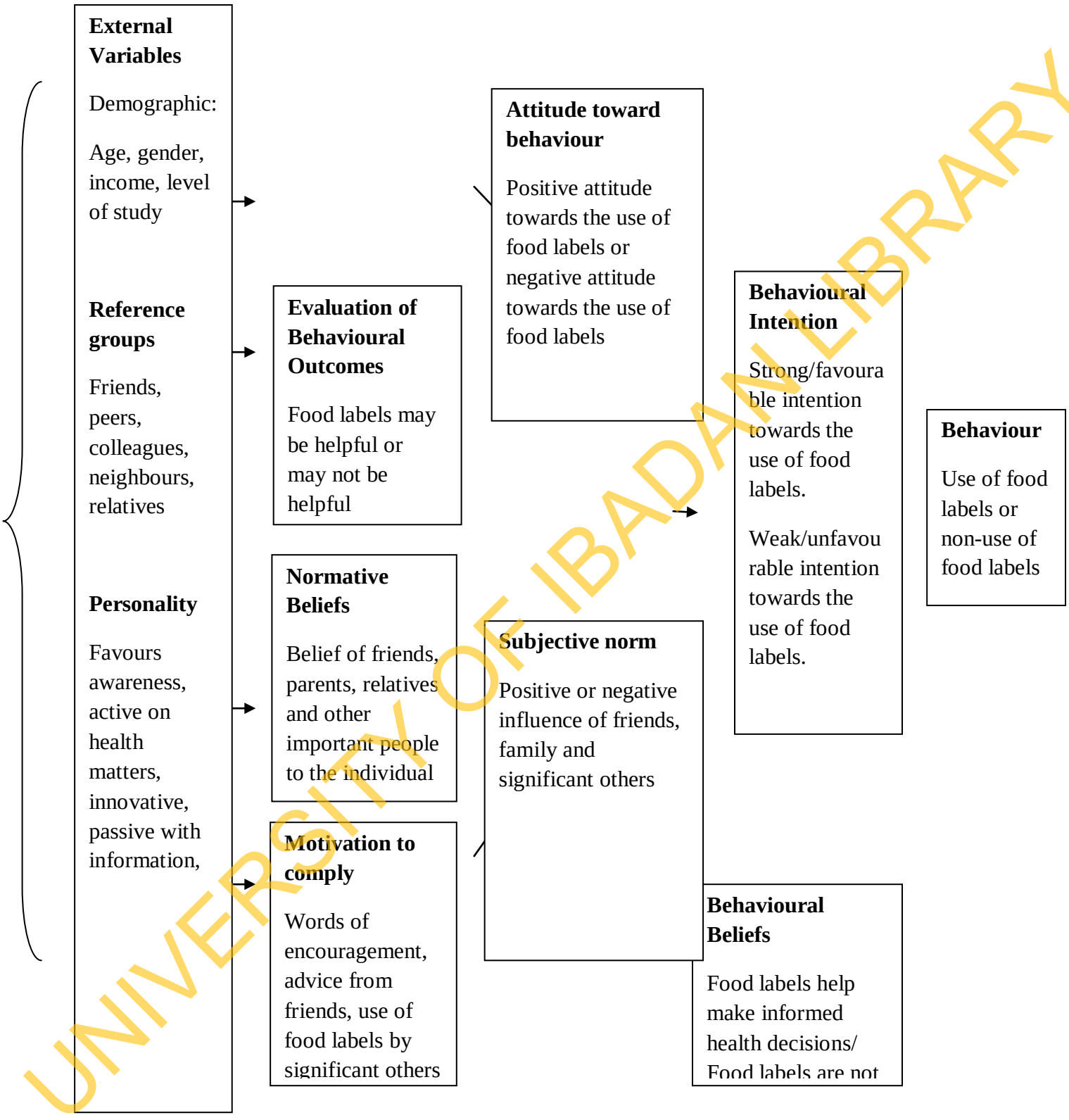

Figure 2.1 Theory of Reasoned Action (Fishbein M. and Ajzen I.(1975))

CHAPTER THREE

METHODOLOGY

3.1 Study Design

This descriptive cross-sectional design will be used for this study. It will be conducted among undergraduate students of the University of Ibadan

3.2 Description of Study Area

This study was conducted in the University of Ibadan which is located in Ibadan North Local Government of Oyo State. Ibadan-north local government is one of the 33 Local Government Areas (LGA) we have in Oyo state, Ibadan, Oyo State, Nigeria. The total population of Ibadan-north is 308,119 (National population Census, 2006). The local government consist of 12 wards with its headquarters located at Agodi, Gate Ibadan. The inhabitants of Ibadan- north local government consist of multi-ethnic nationalities predominantly dominated by Yoruba. The LGA houses several educational institutions such as the premiere University of Ibadan, University College hospital (UCH), the Polytechnic Ibadan. There are a total number of 83 secondary schools, 36 public/ government schools and 47 registered private schools, this educational characteristics places Ibadan-North Local Government at advantage over every other local government areas in Oyo state. Also, within the local government are several health centers, Adeoyo Hospital and several other Primary Health Care and Health Posts located in different wards.

Located 8 kilometers from the center of Ibadan, the University of Ibadan is the first University institution established in Nigeria and it was founded in 1948. It was initially established as a college of the University of London with 104 students spread across three faculties: Arts, Science and Medicine. It became an Autonomous, degree-granting institution in 1962. As at the time of the study, the University has a total enrolment of over 25,000 students shared among the 13 faculties: Arts, Sciences, Basic Medical Science, Clinical Sciences, Dentistry, Public Health, Pharmacy, Agriculture and Forestry, The Social Sciences, Education, Veterinary Medicine, Technology, Law and the various institutes. The University has ten halls of residence for undergraduate students and two for postgraduate students. Out of the ten undergraduate halls of

residence, one is a mixture of both undergraduate and post-graduate students (both male and female). The others consist of six male students' halls of residence, three female students' halls of residence and one is a mixture of both male and female undergraduate students.

3.3 Study Population

The study population considered for this study are the undergraduate students of the University of Ibadan who are currently in session.

3.4 Inclusion Criteria and exclusion criteria

Participants that were included in this study were the consenting undergraduate students of the University of Ibadanwhile other target populations such aspostgraduate students as well as undergraduate students from other tertiary institutions were excluded from the study.

3.5 Sample Size Determination

To determine the sample size for this study, the Leslie Kish formula for sample size determination was used.

This estimated value was obtained as follows:

$$n=\frac{Z^2P(1-P)}{d^2}$$ (Olajide et al, 2011)

Where

n=minimum sample size required

Z=confidence limit of survey at 95% (1.96)

P=proportion of students [50% prevalence].

d=absolute deviation from true value (degree of accuracy) =5%

$$n=\frac{1.96 \times 0.50 \times 0.50}{0.5}$$ =384.16 approximately=384.

A non-response rate of 10% was added to cover for the possible case of incomplete response from respondents. This totalled up to 422.

3.6 Sampling Method

A four-stage sampling technique was employed in selecting 422 respondents from the target population of undergraduate students in the University of Ibadan.

1. The residential halls in the University of Ibadan was stratified into undergraduate and post-graduate halls.

2. A block was then be randomly selected from each of the undergraduate halls in the University of Ibadan. This was done by simple balloting through listing of all blocks in a particular hall. The listed blocks were then been balloted through pick and replace technique.
3. The number of required respondents was proportionally selected from each of the selected blocks in all the undergraduate halls based on the total number of residents in the halls as obtained from the student affairs division.
4. The calculated respondents for each block was then selected through systematic sampling so as to give equal chance to respondents.

3.7 Instrument for Data Collections

A self-administered questionnaire was used for data collection. The instrument was divided into five sections. Section A focus on the socio-demographic information about the respondents, Section B assess the level of knowledge of respondents' on food labels, section C explore the perception of the respondents, section D assess respondents' attitude towards food labels while section E helped gather information on the practice of respondents relating to food labels.

3.8 Recruitment of research assistants, validity and reliability of instrument.

3.8.1 Recruitment of research assistant

Three Research Assistants (RAs) were recruited and trained for the study. The candidates were fluent in both English and Yoruba Languages. During the training they were guided through the different sections of the research instrument. They were also taught how to ask questions without causing any harm to respondents. Training methods such as demonstrations and role-plays was used to facilitate practice for the interview process. The RAs were also taught how to obtain informed consent from respondents and how to review an administered questionnaire for completeness after an interview session. The RAs were involved in the pre-test exercise. This exercise created an opportunity for them to acquire practical experiences related to data collection.

3.8.2 Validity

To ensure validity, there was an extensive literature review on the items to be captured. There was a review of literature on the knowledge of food labels, use of food labels as well as the attitude towards food labels. There was also an effective supervisor consultation for appropriate

guidance. Experts within the department of Health Promotion and Education were also consulted.

3.8.3 Reliability

To ensure reliability, the instrument was pre-tested on 10% of the total sample size. This figure amounts to 42. The population the instrument was pre-tested on are the students of the polytechnic of Ibadan. This population was chosen because of the similar characteristics inherent in the target population.

After the pre-test the data were checked for completeness, sorted and cleaned. A coding guide was developed and used to facilitate the entry of the data into the computer. Subsequently, the data was analysed using descriptive statistics. The data was then been subjected to Cronbach alpha statistical test to measure the instruments internal consistency, that is, how closely related a set of items are as a group. In this test, a result 0.71. was obtained which proves the instrument to be reliable as the closer the value of the reliability test to 1, the more reliable is the instrument. The result of the pre-test was used to adjust and modify questions that are ambiguous to respondents.

3.9 Method of Data Collection

Three trained research assistants were involved in the administration of the questionnaire at the site of the study. The data collection process was carried out over the course of two weeks at the undergraduate residential halls of the University of Ibadan. The administration of the research instrument lasted for three hours on a typical data collection day from 3pm to 6pm.

The data collection process involved the following steps; visits to the halls of residence where data was to be collected, identification of necessary gatekeepers such as the porters and student leaders for formal introduction and to seek for permission to conduct the study. Rapport was established with an eligible respondent after greetings. This was followed by disclosure of the nature and objectives of the study after which written inform consent will obtained from the consenting participants. The pre-tested questionnaires was then administered to the respondents. After each interview session, the administered questionnaire was reviewed for the purpose of completeness. 30 questionnaires were retrieved daily. Overall, 422 questionnaires were administered out of which only 364 questionnaires were retrieved.

3.10 Data Management and Analysis

The data collected was checked for completeness and accuracy in the field. Serial number was assigned to each questionnaire for easy identification, recall of any instrument with problems for correct data entry and analysis. A coding guide was prepared to facilitate data entry and a template was also prepared on SPSS version 22. The administered copies of the questionnaires was then coded and entered into the system. The data was then analysed using descriptive statistics and inferential statistics such as Chi-square test and Fisher's exact test at P = 0.05. Respondents' knowledge was then measured on a 34-point scale and Knowledge Score (KS) of 0-14 (about 40%) as poor, 15-24 (from around 40% to 70%) fair, 25-34 as good knowledge scores. The perception of respondents was measured on a 12-point scale and perception 0-6 poor was rated as poor perception while 7-12 good was be rated as good perception. Attitude was measured on a 9-point scale with 0-5 poor attitude score representing poor attitude while 6-9 attitude score was represent good attitude. Use of respondents relating to food labels was assessed on a 24-point scale with score of 0-12 representing poor use and score of 13-24 representing good use.

3.11 Ethical Consideration

The study was submitted to the UI/UCH ethics review committee for ethical review and approval. Verbal informed consent was obtained from respondents before administering questionnaires. Ethical issues like confidentiality, opportunity to decline interview at any stage and non-exposure to risk was also be discussed with each respondents. Only respondents who are able to give written informed consent were recruited into the study. The written consent was obtained and did not require the names of the participants or any other identifiers but require their signatures and date appended on the consent forms with a copy given to the research participants for future referencing and use by the respondents. They were informed that participation is voluntary and that data collected would be used mainly for research purposes. Anonymity and confidentiality of their responses was also ascertained.

Confidentiality of data: In order to assure respondents of confidentiality of the information that was supplied, names of respondents was required, only identification number was assigned to the questionnaires by the investigator for proper recording.

Beneficence to participants:The outcome of the research was of potential use to the students in that it will serve as a guide to help improve patients' care.

Non-maleficence to participants: The research did not make use of any invasive materials. However, some of the respondents found some of the questions uncomfortable to answer.

Voluntariness: Participation in the study was strictly voluntary. As a result, participants were allowed to freely withdraw from the study at any time they chose during the study.

Limitations of the Study: Out of the 422 questionnaires which were distributed to the respondents, only 364 questionnaires were retrieved. Hence caution must be exercised in generalising the data to the entire population.

CHAPTER FOUR

RESULTS

4.1: Socio-demographic details

Data for some of the socio-demographic details are presented in table 4.1. The mean age of respondents was 21.3 ± 3.2 years with the minimum and maximum age being 16 years and 33 years respectively. A little above half (50.9%) were aged 16 – 20 years with few (38.5%) falling in the 21 – 25 years age bracket. More than half (55.7%) were males while majority (76.6%) were Christians. Almost all (94.7%) reported that they were single when they were asked their marital status. Majority (69.9%) of respondents live on-campus.

More (32.9%) of the respondents were 100 level students while 29.0% and 28.7% were 200 level and 300 level students respectively. Majority (80.8%) of the respondents were of the Yoruba ethnic group while 14.1% were of the Igbo ethnic group. The mean income of respondents was 18,928.9 ± 22,815.5 naira with the minimum amount being 1,000 naira and maximum being 200,000 naira.

Table 4.2 shows the departments of respondents. More (31.2%) had Human Kinetics/ Health Education as their department, 13.0% were students of Special education while 8.6% were students of Law department. Data on respondents' faculties were presented in table 4.3. Majority (65.8%) were students of faculty of education while 8.6% were students of faculty of Law.

Table 4.1: Socio-demographic details

Demographics	N	%
Age*(N=287)		
16-20	146	50.9
21-25	111	38.7
≥26	30	10.5
Sex (N=359)		
Male	200	55.7
Female	159	44.3
Religion (N=359)		
Christianity	275	76.6
Islam	81	22.5
Traditional	2	0.7
Judaism	1	0.2
Marital Status (N=360)		
Single	341	94.7
Married	14	3.9
Widowed	2	0.6
Separated	2	0.6
Cohabiting	1	0.2
Residence (N=356)		
On-campus	249	69.9
Off-campus	107	30.1
Level of study (N=359)		
100L	118	32.9
200L	104	29.0
300L	103	28.7

400L	26	7.2
500L	8	2.2
Ethnic group (N=354)		
Yoruba	286	80.8
Igbo	50	14.1
Hausa	7	2.0
Others***	11	3.1
Income from all sources in a month (Naira) (N=218)**		
1000-5000	32	14.7
6000-10000	68	31.2
11000-15000	40	18.3
16000-20000	35	16.1
21000>	43	19.7

*Mean age= 21.3 ± 3.2, Median age = 20.0, Minimum age = 16 years, Maximum age = 33 years

**Mean income= 18,928.9 ± 22,815.5, Median income = 15000, Minimum income = 1,000, Maximum income = 200,000

***Others= Edo 4 (1.0%), Urhobo 2 (0.6%), Yaudang 2 (0.6%), Ibibio 1 (0.3%), Tiv 1 (0.3%), Ukwani 1 (0.3%)

Table 4.2: Departments of respondents

Department	N	%
Human kinetics/health education	98	31.2

Special Education	41	13.0
Law	27	8.6
Adult Education	25	8.0
Teacher education	15	4.8
Educational Management	14	4.5
CLA	7	2.2
Counselling and Human development studies	6	1.9
Biochemistry	5	1.6
Linguistics	5	1.6
Zoology	5	1.6
Civil Engineering	4	1.3
Pharmacy	4	1.3
Veterinary medicine	4	1.3
Agric. Enginnering	4	1.3
Agric Econs	3	1.0
Botany	3	1.0
Economics	3	1.0
Geology	3	1.0
Guidance and Counselling	3	1.0
Mechanical Engineering	3	1.0
Psychology	3	1.0
MLS	3	1.0
Agronomy	2	0.6
Classics	2	0.6
CPEB	2	0.6
History	2	0.6
Petroleum Engineering	2	0.6

Physics	2	0.6
Physiology	2	0.6
Geography	2	0.6
Human Nutrition	2	0.6
Others*	8	2.4

*Chemistry 1 (0.3%), Computer Science 1 (0.3%), Electrical Engineering 1 (0.3%), Food Technology 1 (0.3%), Mathematics 1 (0.3%), MBBS 1 (0.3%), Microbiology 1 (0.3%), Sociology 1 (0.3%).

Table 4.3: Faculty of respondents

Faculty	N	%
Education	206	65.8
Law	27	8.6
Sciences	20	6.4
Technology	15	4.8
Arts	12	3.8
Basic Medical Sciences	9	2.9
Social sciences	8	2.6
Agriculture and Forestry	6	1.9
Pharmacy	4	1.3
Veterinary Medicine	3	1.0
Public Health	2	0.6
Clinical Sciences	1	0.3

4.2: Knowledge of Food Labels

Information on the definition of food label and 'best before' was presented in table 4.4. More than half (55.4%) correctly stated that food label was all written components on the packaged food product, 24.8% reported that food label is the Nutrition information on the packaged food product while 11.7% stated that the manufacturer name and address on the packaged food product best defines what a food label is. Almost all (92.2%) reported that they knew what 'best before' on food label is. Majority (72.5%) correctly stated that 'best before' means a date after which a product cannot be consumed. However, 24.2% erroneously reported that product can still be managed after the 'best before' date.

Table 4.5 shows the reported components of food labels by respondents. Almost all correctly reported the list of ingredients (95.3%), NAFDAC number (94.9%), the manufactured date (93.2%), the expiry date (93.2%), the nutrition information (95.2%) and name of packaged food (92.8%) as components of food labels. Similarly, majority correctly mentioned name of manufacturer (80.0%), Instruction for use (88.9%), as well as Net contents and drained weight (Liquid foods–volume, solid foods – weight) (87.7%) as components of food labels.

Respondents' knowledge on information from the food label is presented in table 4.6. Majority correctly reported Standard of the product (84.0%) . (89.0%) as information that could be derived from food label. Almost all (92.2%) correctly reported nutritional details as information that one could get from the food label. More than half (57.8%) reported erroneously that price of the product could be derived from the food label.

Table 4.7 shows the respondents knowledge on availability of some nutritional information. More than half (55.8%) stated that there was availability of information on the nutritional value, serving size, calories, nutrients and grams of fat contents. Majority (63.7%), (67.8%) reported that information contained list of nutrients that could help to restrict intake of certain nutrients that one may be allergic to and list of nutrients that individuals may require in sufficient quantity respectively. Items contained in the nutritional details found in the food label is presented in table 4.8. Almost all respondents reported correctly grams of fat (92.4%), Nutrients (94.3%) and ingredients (93.2%) as items contained in the nutritional details found in food labels. Other reported items include manufacture date (90.4%) and instruction on storage (90.7%).

Benefit of food labels is presented in table 4.9. When asked whether nutritional information on food labels lead to better management of some diseases, 66.6% correctly agreed. On how the information could be beneficial, 41.7% stated that the information could help individuals restrict intake of certain unfavourable nutrients while 28.5% reported that those trying to get enough nutrients could make use of the information.

Table: 4.4: Respondents' definition of food label and 'best before'

Variable	N	%
Explanation of food label (N=298)		
All written components on the packaged food product*	165	55.4
The Nutrition information on the packaged food product	74	24.8
The manufacturer name and address on the packaged food product	35	11.7
Just the instruction for use on the packaged food product	24	8.1
Whether know what best before means (N=347)		
Yes	320	92.2
No	27	7.8
What best before means (N=320)		
Expiry date/ It means a date after which the product cannot be consumed *	232	72.5
Product can still be managed after the date	77	24.2
Same as manufacture date	11	3.3

***Correct response**

Table 4.5: Components of food labels

Components	Yes (%)	No (%)	Don't Know (%)	Total (%)
List of ingredients	343 (95.3)*	9 (2.5)	8 (2.2)	360 (100.0)
Name of manufacturer	276 (80.0)*	68 (19.2)	10 (2.8)	354 (100.0)
NAFDAC number	338 (94.9)*	14 (3.9)	4 (1.2)	356 (100.0)
Manufactured date	331 (93.2)*	19 (5.4)	5 (1.4)	355 (100.0)
Expiry date	331 (93.2)*	17 (4.8)	7 (2.0)	355 (100.0)
Instruction for use	313 (88.9)*	27 (7.7)	12 (3.4)	352 (100.0)
Nutrition information	336 (95.2)*	11 (3.1)	6 (1.7)	353 (100.0)
Net contents and drained weight (Liquid foods–volume, solid foods – weight)	306 (87.7)*	28 (8.0)	15 (4.3)	349 (100.0)
Country of origin	292 (83.0)*	42 (11.9)	18 (5.1)	352 (100.0)
Name of packaged food	328 (92.9)*	17 (4.8)	8 (2.3)	353 (100.0)

Table 4.6: Information from the food label

Information	Yes (%)	No (%)	Don't Know (%)	Total (%)
Standard of the product	299 (84.0)*	39 (11.0)	18 (5.0)	356 (100.0)
Nutritional label/details	320 (92.2)*	24 (6.9)	3 (0.9)	347 (100.0)
How to use food product	324 (90.8)*	23 (6.4)	10 (2.8)	357 (100.0)
Life span of the product	315 (89.0)*	31 (8.8)	8 (2.2)	354 (100.0)
Price of the product	204 (57.8)	124 (35.1)*	25 (7.1)	353 (100.0)

Table 4.7: Availability of Nutritional Information

Variables	Yes Always (%)	Yes Sometimes (%)	Never (%)	Total (%)
Whether food package convey sufficient information on the nutritional value, serving size, calories, nutrients and grams of fat contents to you	191 (55.8)*	131 (38.3)	20 (5.9)	342 (100.0)
Whether the information contained on the list of nutrients help you to restrict intake of certain nutrients that you may be allergic to	226 (63.7)*	102 (28.7)	27 (7.6)	355 (100.0)
Whether the information contained on the list of nutrients help to promote the consumption of certain nutrients that you or some individual may require in sufficient quantity.	238 (67.8)*	61 (17.4)	52 (14.8)	351 (100.0)
Whether the food package and label convey meaningful information on the company name, address and the expiry date	176 (50.0)*	162 (46.0)	14 (4.0)	352 (100.0)

Table 4.8: Items contained in the nutritional details found in the food label

Items	True (%)	False (%)	Total (%)
Serving size	255 (72.6)*	96 (27.4)	351 (100.0)
Number of calories	314 (89.0)*	39 (11.0)	353 (100.0)
Grams of fat	327 (92.4)*	27 (7.6)	354(100.0)
Nutrients	330 (94.3)*	20 (5.7)	350 (100.0)
Ingredients	329 (93.2)*	24 (6.8)	353 (100.0)
Manufacture date	320 (90.4)*	34 (9.6)	354 (100.0)
Instruction on storage	320 (90.7)*	33 (9.3)	353 (100.0)

Table 4.9: Benefit of food labels

Variables	N	%
Whether nutritional information on food labels lead to better management of some diseases (N=356)		
Yes	237*	66.6
No	64	18.0
Don't Know	55	15.4
How information relating to nutrition details can be helpful (N=544)**		
Information could help individuals restrict intake of certain unfavourable nutrients	227*	41.7
Those trying to get enough nutrients could make use of the information gotten from the nutritional details	155*	28.5
The information could be helpful in managing some diseases	127*	23.3
The information cannot be helpful at all	35	6.4

**Multiple response

4.2.1: Level of knowledge and relationship of knowledge categories with selected Socio-demographics characteristics

The categories of knowledge among the respondents was presented in table 4.10. The mean knowledge score was 25.6 ± 4.5 points with the minimum and maximum knowledge being 5 and 33 points respectively. Majority (68.0%) of the respondents had good knowledge while 29.5% had fair knowledge. Very few (2.5%) respondents had poor knowledge

Table 4.11 shows the categorisation of knowledge by sex. Majority (70.9%) of the male respondents had good knowledge while 27.6% of the same population had fair knowledge. Similarly, more (65.4%) of the female respondents had good knowledge while 30.8% had fair knowledge. Fishers exact test showed that there was no significant relationship between knowledge and sex of respondents

Categorisation of knowledge by level of study is presented in table 4.12. Majority (70.1%) of the respondents who were in their first year had good knowledge while 28.2% of the same population had fair knowledge. Also 67.3% of the respondents who were in their second year had good knowledge while 31.7% had fair knowledge. Up to 71.8% of 300 level students had good knowledge while 25.2% had poor knowledge. Fishers exact test showed that there was no significant relationship between knowledge and level of study of respondents

Table 4.13 shows the categorisation of knowledge by age. Majority (71.7%) of respondents who were aged 16 – 20 years had good knowledge while 26.2% of the same age category had fair knowledge. Similarly, more (67.6%) respondents who fell in the 21 - 25 years age bracket had good knowledge while 30.6% had fair knowledge. Fishers exact test showed that there was no significant relationship between knowledge and age of respondents

Categorisation of knowledge by residence is shown in table 4.14. Majority (68.2%) of respondents who were living on campus had good knowledge while 30.2% had fair knowledge. Similarly, 68.2% of respondents leaving off campus had good knowledge while 28.3% had fair knowledge. The Fishers exact test showed that there was no significant relationship between knowledge and residence of participants.

Table 4.15 shows categorisation of knowledge by ethnicity. Majority (69.7%) of the respondents who were Yoruba had good knowledge while 28.9% of the same ethnic group had fair

knowledge. Less than half (44.4%) of respondents who were of the Hausa ethnic group had good knowledge while 33.4% of the same population had fair knowledge. More (64.0%) of the respondents who were Igbo had good knowledge while 32.0% had fair knowledge. The Fishers exact test showed that there was no significant relationship between knowledge and ethnicity of participants.

Table 4.10: Categorisation of knowledge among respondents

Knowledge Categories*	N	%
Poor	9	2.5
Fair	107	29.5
Good	247	68.0
Total	363	100.0

*Mean knowledge score = 25.6 ± 4.5, median knowledge Score = 27.0, minimum knowledge Score = 5 points, maximum knowledge score= 33 points

Table: 4.11: Categorisation of knowledge by sex

Sex	Knowledge Categories			Total (%)	**X^2	df	P-value
	Poor (%)	Fair (%)	Good (%)				
Male	3 (1.5)	55 (27.6)	141 (70.9)	199 (55.6)	2.460	2	0.285*
Female	6 (3.8)	49 (30.8)	104 (65.4)	159 (44.4)			
Total	9 (2.5)	104 (29.1)	245 (68.4)	358 (100.0)			

*Not significant at P<0.05

**Fishers Exact test was used

Table: 4.12: Categorisation of knowledge by level of study

Level of study	Knowledge Categories			Total (%)	**X^2	df	P-value
	Poor (%)	Fair (%)	Good (%)				
100L	2 (1.7)	33 (28.2)	82 (70.1)	117 (32.7)	9.194	8	0.283*
200L	1 (1.0)	33 (31.7)	70 (67.3)	104 (29.1)			
300L	3 (2.9)	26 (25.2)	74 (71.8)	103 (28.8)			
400L	0 (0.0)	10 (38.5)	16 (61.5)	26 (7.3)			
500L	1 (12.5)	4 (50.5)	3 (37.5)	8 (2.1)			
Total	7 (2.0)	106 (29.6)	245 (68.4)	358 (100.0)			

*Not significant at P<0.05

**Fishers Exact test was used

Table: 4.13: Categorisation of knowledge by Age

Age group (in years)	Knowledge Categories			Total (%)	**X^2	df	P-value
	Poor (%)	Fair (%)	Good (%)				
16-20	3 (2.1)	38 (26.2)	104 (71.7)	145 (50.7)	1.887	4	0.750*
21-25	2 (1.8)	34 (30.6)	75 (67.6)	111 (38.8)			
≥26	1 (3.3)	10 (33.3)	19 (63.4)	30 (10.5)			
Total	6 (2.1)	82 (28.7)	198 (69.2)	286 (100.0)			

*Not significant at P<0.05

**Fishers Exact test was used

Table: 4.14: Categorisation of knowledge by residence

Residence	Knowledge Categories			Total (%)	**X^2	df	P-value
	Poor (%)	Fair (%)	Good (%)				
On campus	4 (1.6)	75 (30.2)	169 (68.2)	248 (69.8)	1.708	2	0.421*
Off campus	4 (3.7)	30 (28.3)	73 (68.2)	107 (30.1)			
Total	8 (2.3)	105 (29.6)	242 (68.1)	355 (100.0)			

*Not significant at P<0.05

**Fishers Exact test was used

Table: 4.15: Categorisation of knowledge by ethnicity

Ethnic Group	Knowledge Categories			Total (%)	**X^2	df	P-value
	Poor (%)	Fair (%)	Good (%)				
Yoruba	4 (1.4)	83 (28.9)	200 (69.7)	287 (80.4)	11.266	6	0.059*
Hausa	2 (22.2)	3 (33.4)	4 (44.4)	9 (2.5)			
Igbo	2 (4.0)	16 (32.0)	32 (64.0)	50 (14.0)			
Others* **	0 (0.0)	4 (36.4)	7 (63.6)	11 (3.1)			
Total	8 (2.2)	106 (29.6)	243 (68.2)	357 (100.0)			

*Not significant at P<0.05

**Fishers Exact test was used

4.3: Perception about food labels

Respondents' perception about food labels is presented in table 4.16. Majority (70.6%) opined that food labels were not important while 25.0% of the population agreed with the notion. The opinion that information contained in food labels should be made suitable to read was reported by 91.0% of the respondents. Similarly, 82.9% of the respondents reported that food labels could help guide against certain diseases. Majority (65.0%) of the population disagreed with the notion that wrong information in food label is not dangerous to health while 30.7% agreed with the notion.

More (79.4%) respondents stated that the durability of a food product could be deduced from the food label while 15.2% disagreed. Above half (53.5%) disagreed with the opinion that all food labels are easy to understand while 38.7% of the respondents agreed. Majority (75.8%) of the respondents reported that friends and peers can influence one's decision to use food labels while 69.7% agreed that food labels were subject to regulations.

Few (17.3%) believed that regulations regarding food labels are sufficient enough to enhance the promotion of credible information while 64.7% agreed with the notion. Less than half (46.1%) reported that the use of food labels by friends and relatives cannot make one use food labels while 66.8% of the population believed that reading food labels wastes time. Just over half (50.3%) stated that information on food labels could be misleading.

Table 4.16: Respondents' perception about food labels

Perception Statements	Agree (%)	Disagree (%)	Undecided (%)	Total (%)
Food labels are not important	85 (25.0)	240 (70.6)*	15 (4.4)	340 (100.0)
The information contained in the food labels should be made suitable to read	315 (91.0)*	25 (7.3)	6 (1.7)	346 (100.0)
Food labels could help guide against certain diseases	287 (82.9)*	38 (11.0)	21 (6.1)	346 (100.0)
Wrong information in the food label is not dangerous to health	106 (30.7)	224 (65.0)*	15 (4.3)	345 (100.0)
The durability of a food product could be deduced from the food label	273 (79.4)*	52 (15.1)	19 (5.5)	344 (100.0)
All food labels are easy to understand	134 (38.7)	185 (53.5)*	27(7.8)	346 (100.0)
Friends and peers can influence one's decision to use food labels	263 (75.8)*	56 (16.1)	28 (8.1)	347 (100.0)
Food labels are subject to regulations	239 (69.7)*	43 (12.5)	61 (17.8)	343 (100.0)
regulations regarding food labels are sufficient enough to enhance the promotion of credible information	224 (64.7)	60 (17.3)*	62 (17.9)	346 (100.0)
The use of food labels by friends and relatives cannot make one use food labels	139 (40.3)	159 (46.1)*	47 (13.6)	345 (100.0)
Reading food labels wastes time	101 (29.2)	231 (66.8)*	14 (4.0)	346 (100.0)
Information on food labels could be misleading	175 (50.3)*	128 (36.8)	45 (12.9)	348 (100.0)

4.3.1: Perception categories and relationship with Socio-demographics, knowledge

The categories of perception among the respondents was presented in table 4.17. The mean perception score was 7.6 ± 2.1 points with the minimum and maximum knowledge being 0 and 12 points respectively. Majority (73.9%) of the respondents had good perception while 26.1% had poor perception.

Table 4.18 shows the categorisation of perception by knowledge. Majority (84.5%) of the respondents who had good knowledge had good perception while 15.5% of the same population had poor perception. Just above half (52.0%) of respondents who had fair knowledge had good perception while 48.0% had poor perception. Fishers exact test showed that there was a significant relationship between perception and knowledge of respondents

Table 4.17: Categorisation of perception among respondents

Perception* Categories	N	%
Poor	91	26.1
Good	257	73.9
Total	348	100.0

*Mean perception score = 7.6 ± 2.1, median perception Score = 8.0, minimum perception Score = 0 points, maximum perception score= 12 points

Table 4.18: Categorisation of perception by level of knowledge

Knowledge Categories	Perception categories		Total (%)	**X^2	Df	P-value
	Poor (%)	Good (%)				
Poor	5 (71.4)	2 (28.6)	7 (2.0)	44.331	2	0.000*
Fair	49 (48.0)	53 (52.0)	102 (29.3)			
Good	37 (15.5)	202 (84.5)	239 (68.7)			
Total	91 (26.1)	257 (73.9)	348 (100.0)			

***Significant at P<0.05**

****Fishers exact was used**

4.4: Respondents Attitude towards food labels

Attitude of respondents regarding food labels is presented in table 4.19. Majority (82.4%) stated that they could recommend the use of food labels to friends. Similarly, 67.0% disagreed with the statement *"I do not regard food labels as important therefore I cannot use it to make any decision"*. Less than half (47.2) also disagreed with the notion that they can purchase packaged food product without reading the food label. Majority disagreed with the statement; *"Even if am advised on the importance of food labels, I cannot use it*". Above half (54.0%) disagreed with the opinion that they could only make use of the food labels because of the NAFDAC number as it is the only important item on it while 34.8% agreed.

More than half (59.4%) reported that friends can influence decision to use food labels while 29.4% disagreed with the notion. Less than half (46.5%) disagreed that they cannot use the food label as information presented on food labels are sometime not correct. Majority (71.3%) stated that they prefer the use of food labels as it makes them conscious of their health while 62.6% reported that they trust the information on food labels enough to make a health decision.

Table 4.19: Attitude of respondents regarding food labels

Attitudinal Statements	Agree (%)	Disagree (%)	Undecided (%)	Total (%)
I can recommend the use of food labels to my friends	290 (82.4)*	33 (9.4)	29 (8.2)	352 (100.0)
I do not regard food labels as important therefore I cannot use it to make any decision	89 (25.3)	236 (67.0)*	27 (7.7)	352 (100.0)
I can purchase packaged food product without reading the food label	145 (42.0)	163 (47.2)*	37 (10.8)	345 (100.0)
Even if am advised on the importance of food labels, I cannot use it	70 (20.1)	248 (71.3)*	30 (8.6)	348 (100.0)
I can only make use of the food labels because of the NAFDAC number as it is the only important item on it	121 (34.8)	188 (54.0)*	39 (11.2)	348 (100.0)
My friends can influence my decision to use food labels	208 (59.4)*	103 (29.4)	39 (11.2)	350 (100.0)
Information presented on food labels are sometime not correct so I cannot use food labels	113 (32.7)	161 (46.5)*	72 (20.8)	346 (100.0)
I prefer the use of food labels as it makes me conscious of my health	248 (71.3)*	58 (16.7)	42 (12.0)	348 (100.0)
I trust the information on food labels enough to make a health decision	219 (62.6)*	62 (17.7)	69 (19.7)	350 (100.0)

4.4.1: Attitudinal categories and relationship with knowledge and perception

The categories of attitude among the respondents was presented in table 4.20. The mean attitude score was 5.6 ± 2.2 points with the minimum and maximum knowledge being 0 and 9 points respectively. Majority (73.9%) of the respondents had good attitude while 26.1% had poor attitude.

Table 4.21 shows the categorisation of attitude by knowledge. Majority (65.0%) of the respondents who had good knowledge had good attitude while 35.5% of the same population had poor perception. More (60.0%) of respondents who had fair knowledge had negative attitude while 40.0% had positive attitude. Fishers exact test showed that there was a significant relationship between perception and knowledge of respondents

The categorisation of attitude by perception is presented in table 4.22. Majority (89.8%) of the respondents who had good perception had good attitude while 10.2% of the same population had negative attitude. Over half (52.7%) of respondents who had poor perception had positive attitude while 47.3% had negative attitude. Chi-square test showed that there was a significant relationship between attitude and perception of respondents (X^2=20.7, df=2, p=0.00)

Table 4.20: Categorisation of attitude among respondents

Attitudinal* Categories	N	%
Negative	91	26.1
Good	257	73.9
Total	348	100.0

*Mean attitude score = 5.6 ± 2.2, median attitude Score = 6.0, minimum attitude Score = 0 points, maximum attitude score= 9 points

Table 4.21: Categorisation of attitude by level of knowledge

Knowledge Categories	Attitudinal categories		Total (%)	**X^2	Df	P-value
	Negative (%)	Positive (%)				
Poor	5 (71.4)	2(28.6)	7 (2.0)	20.743	2	0.000*
Fair	63(60.0)	42 (40.0)	105 (29.8)			
Good	84 (35.5)	156 (65.0)	240 (68.2)			
Total	152 (43.2)	200 (56.8)	352 (100.0)			

***Significant at P<0.05**

****Fishers exact was used**

Table 4.22: Categorisation of attitude by perception

Perception Categories	Attitudinal categories		Total (%)	X^2	Df	P-value
	Negative (%)	Positive (%)				
Poor	71 (47.3)	79(52.7)	150 (43.2)	60.848	1	0.000*
Good	20 (10.2)	177 (89.8)	197 (56.8)			
Total	91 (26.2)	256 (73.8)	347 (100.0)			

***Significant at P<0.05**

4.5: Reported utilization of food labels

The utilization of food labels is presented in table 4.23. Majority (73.1%) reported that they use food labels. The proportion that do not use food labels attributed their reasons for nonuse to the following; small print (16.0%), not interested (18.1%), don't believe it (12.8%) and no time (12.8%). More (34.0%) stated that they do not have any opinion about that. This same population that do not use food labels were asked if enlightenment will encourage their use of food labels, 59.6% said yes it will. Majority (85.9%) of the respondents who used food labels reported that they consider the expiring dates of products bought while 71.9% stated that read food labels before buying the food product.

The frequency at which respondents read components of foods labels are presented in table 4.24. More (35.2%) reported that they read nutritional information sometimes while 21.9% reported that they read the same item always. On NAFDAC number, below half (40.3%) stated that they read it always while 19.1% and 18.0% reported that they read NAFDAC number often and sometimes respectively. Up to 47.3% stated that they read manufactured date of the product always while well over half (58.3%) reported that they read expiry date always. More, (35.2%) stated that they read the list of ingredients sometimes. Similarly, 35.2% said they read instructions on food labels sometimes. On storage condition, 31.6% reported that they read it sometimes.

Table 4.25 shows the information on nutrients checked and influence to use food labels. More (32.5%) stated that they look out for total energy component of the nutritional information on food labels, 17.1% reported that they look out for protein while 15.4% reported that they look out for vitamins. More than half (55.4%) said that food labels influence their decisions to purchase food products sometimes while 30.9% stated that food labels influence their decisions to purchase food products always, which can be deduced that there is an increase in food label use with an increase in knowledge. Slightly above half (50.1%) stated that their friends or peers make use of food labels while 33.4% reported that they do not know if their friends make use of food labels. On factors that could encourage use of food labels, 36.8% reported that information should be clear, 25.7% stated that information should be readily legible while 19.2% stated that the position of food labels on the packaged food should be considered. Hence, it may be stated that perception towards food label use may be influenced by the above stated factors.

Table 4.23: Utilisation of food labels

Variables	N	%
Whether read food labels (N=350)		
Yes	**256**	**73.1***
No	94	26.9
Reasons for not reading information on food labels (N=94)		
Small print	15	16.0
No Opinion	32	34.0
Not interested	17	18.1
Do not believe it	12	12.8
No time	12	12.8
Do not understand	6	6.4
Whether enlightenment will encourage the use of food labels effectively (N=94)		
Yes	56	59.6
No	14	14.9
Don't know	24	25.5
Whether consider the expiring dates of the products bought (N=256)		
Yes	220	85.9
No	36	14.1
When the food label of purchased food product is read (N=256)		
Before buying the food product	184	71.9
After buying the food product at the food store	46	18.0
When you get home from the food store	25	9.8
Don't need it	1	0.4

***73.1% is the proportion of people who use food labels.**

Table 4.24: Frequency in reading the components of the food label

N=256

Components	Never (%)	Rarely (%)	Sometimes (%)	Often (%)	Always (%)	Total (%)
Nutrition information	18 (7.2)	48 (18.7)	90 (35.2)	44 (17.0)	56 (21.9)	256 (100.0)
NAFDAC number	10 (4.1)	28 (10.7)	67 (26.1)	48 (18.8)	103 (40.3)	256 (100.0)
Manufactured date	11 (4.3)	29 (11.3)	46 (18.0)	49 (19.1)	121 (47.3)	256 (100.0)
Expiry date	9 (3.8)	18 (7.0)	43 (16.9)	37 (14.0)	149 (58.3)	256 (100.0)
List of ingredients	11 (4.3)	41 (16.0)	90 (35.2)	44 (17.2)	70 (27.3)	256 (100.0)
Instructions on food label	13 (5.1)	32 (12.5)	90 (35.2)	53 (20.7)	68 (26.5)	256 (100.0)
Storage condition	23 (9.0)	34 (13.3)	81 (31.6)	60 (23.4)	58 (22.7)	256 (100.0)

Table 4.25: Nutrients checked while making use of food label and influence to use food labels

Variables	N	%
Nutrients looked out for when nutrition information under the food label is checked (N=422)**		
Total Energy	137	32.5
Protein	72	17.1
Vitamins	65	15.4
Carbohydrate	55	13.0
Fat	60	14.2
Minerals	33	7.8
Whether food label on a product influence decision to purchase it (N=343)		
Yes Always	106	30.9
Yes Sometimes	190	55.4
Never	47	13.7
Whether friends or peers make use of food labels (N=335)		
Yes	168	50.1
No	55	16.4
Don't know	112	33.4
Factors that could encourage the use of food labels (N=646)*		
Information should clear	238	36.8
Readily legible	166	25.7
Position on the packaged food	124	19.2
Not obscured by any written printed matter	118	18.3

4.5.1: Categorisation of food label use by knowledge, perception and attitude

The categorisation of food label use by knowledge is presented in table 4.26. Majority (79.0%) of respondents who had good knowledge used food labels. Similarly, 61.9% of the population who had fair knowledge used food labels. More than half (57.1%) of the respondents who had poor knowledge did not use food labels. The Fishers exact test revealed that there was a significant association between use of food labels and knowledge.

Table 4.27 shows the categorisation of food label use by perception. Majority (77.2%) of respondents who had good perception about food labels used food labels while 60.4% of respondents who had poor perception used food labels. The chi-square test revealed that there was a significant association between use of food labels and perception.

The categorisation of food label use by attitude is presented in table 4.28. Majority (82.8%) of respondents who had positive attitude used food labels while just 39.5% of respondents who had negative attitude did not use food labels. The chi-square test revealed that there was a significant association between use of food labels and attitude.

Table 4.26: Categorisation of food label use by knowledge

Knowledge Categories	Use of food labels		Total (%)	**X^2	df	P-value
	Yes (%)	No (%)				
Poor	3 (42.9)	4 (57.1)	7 (2.0)	13.789	2	0.001*
Fair	65 (61.9)	40 (38.1)	105 (30.0)			
Good	188 (79.0)	50 (21.0)	238 (68.0)			
Total	256 (73.1)	94(26.9)	350 (100.0)			

*Significant at P<0.05

**Fishers exact was used

Table 4.27: Categorisation of food label use by perception

Perception Categories	Use of food labels		Total (%)	X^2	df	P-value
	Yes (%)	No (%)				
Poor	55 (60.4)	36 (39.6)	91 (26.4)	9.455	1	0.002*
Good	196 (77.2)	58 (22.8)	254 (73.6)			
Total	251 (72.8)	94(27.2)	345 (100.0)			

*Significant at P<0.05

Table 4.28: Categorisation of food label use by attitude

Attitude Categories	Use of food labels		Total (%)	X^2	df	P-value
	Yes (%)	No (%)				
Negative	92 (60.5)	60 (39.5)	152 (43.4)	21.772	1	0.000*
Positive	164 (82.8)	34 (17.2)	198 (56.6)			
Total	256 (73.1)	94(26.9)	350 (100.0)			

*Significant at P<0.05

CHAPTER FIVE

DISCUSSION AND CONCLUSION OF RESULTS.

This study was conducted to investigate the knowledge, attitude and use of food labels among undergraduate students of the University of Ibadan, Oyo state, Nigeria. It is with the hope that this study will help the public against misleading and misrepresentation which often time have been a menace in the society and have caused serious health challenges in the nation particularly the Non Communicable Diseases such as overweight, Obesity diabetes among others. The evidence generated from this study could help experts in the field of nutritionist, science laboratory, the health personnel and standard organization of the country which will go a long way in preventing some of the preventable diseases that has claimed lives of thousands due to lack of understanding of the labelling on the goods purchased. Other sub-sections highlighted in this chapter are implication of findings for health promotion and education, conclusions and recommendations.

5.1 The socio-demographic characteristics of the respondents.

This study shows that more than half of the respondents were males in this study, similarly, majority of the were also from a Health Education background which is similar to the findings of a study conducted among university students by Nurliyana, Norazmir and Khairil Anuar, (2011) where most of the respondents were males. Majority of the respondents were of the Christian faith. The results of the study also showed that a majority of the respondents were of the Yoruba ethnic group while a little above one tenth were of the Igbo ethnic group which was in divergence to the result of a study conducted in Northern Nigerian by Ezeh and Ezeh In 2016.a little above half of the respondents were between the age of 16-20 years which was similar to the findings of a study conducted by Norazlanshah, Muhammad, Hasmira, Mashita, Norfazilah, Fazlyla (2013) among university students in Malasia.

5.2: Knowledge of Food Labels

In this study, majority (68.0%) of the respondents had good knowledge of food label use which could be due to the fact that the respondents were all undergraduate students and might have had prior knowledge on food labels. More than half, of the respondents in this study correctly respondents correctly stated that food label was all written components on the packaged food

product, almost all of the respondents correctly stated that they knew what best before means while a fourth of the respondents erroneously reported that the product can still be managed after the best before date. This points to an underlying problem which may be related to socioeconomic factors of the respondents.

The respondents knowledge on the reported food label components in this study was relatively high as a preponderance of the respondents correctly reported the components of food labels, a findings which may be as a result of health consciousness among the respondents and also probably influenced by their academic environment with free access to nutritional information and this findings was in divergent to the findings of a study conducted among college students by Norazmir, Norazlanshah, Naqieyah, Khairil Anuar, (2012) where a lack of knowledge regarding nutrition labels resulted in minimal food label reading.

Respondents' knowledge on information gotten from the food label showed that, Majority correctly reported that information on the product, product life span could be derived from the food label a findings similar to that of the study conducted by Nurliyana, Norazmir, et al. (2011). However, more than half of the respondents reported erroneously that price of the product could be derived from the food label which points to the fact that their purchasing decision might be influenced by the price tags on the food labels. This findings is in divergence with the findings of the study conducted by Mahgoub., Lesoli, Gobotswang,, 2007; MORI, 2010.

Majority of the respondents also reported that food labels presents information on the list of nutrients that could help to restrict intake of certain nutrients that one may be allergic to and list of nutrients that individuals may require in sufficient quantity this findings may relates to an increase knowledge of nutritional food intake and health consciousness on the part of the respondents. This finding is in congruent with that of the study conducted by Heike, S., and Taylor, (2012).

When asked whether nutritional information on food labels lead to better management of some diseases, majority of the respondents specifically gave a correct response on how the nutritional information could be beneficial to help individuals restrict intake of certain unfavourable nutrients and vise versa. The good knowledge of better disease management based on nutritional information is in congruent with the study conducted by Washi, (2012).

It this study it was shown that, majority of the respondents had good knowledge of food label use this may be as a result of the academic environment of the respondents which offers an easy access to basic nutritional information both from the academic subject settings and the interaction with other students who are current running a major course in nutrition. This findings of this study is in contrast to that of the study conducted by Anderson, Ruth,and Rumble, (2014). In this study it was found out that, there is no significant association between the knowledge and the place of residence or ethnicity of the respondents a contrary findings to a study conducted by Kim and Douthitt (2004.

This study finds a decline in the food label use with an increase age, as it was revelled in the study that the respondents within the age of 16-20 years constituting the largest (71.7%) proportion with good knowledge, this may be due to the fact that this age group are known to be very curious about new information and a relatively easy access to online nutritional information among others. This findings is contrary to that of the study conducted by Todd and Variyam, (2008) where the knowledge increases with increase in age

A study by Mahgoub *et al* (2007) observed a direct relationship between sex, level of education and family income with level of knowledge and use of food labelling information in purchasing foods among consumers in Lesotho which is divergent to the findings of this study.

5.3: Perception about food labels

Majority (70.6%) of the respondents in this study opined that food labels were not important. This finding is congruence with the study conducted by (Caffrey, 2014; Chaussee, 2014; Nichols, 2014) in this studies, Consumers' perception of the food companies involved in developing and selling labelled foods affects their suspicion of the labelled food technology as well.

Folta (2012) proposed that the public has trouble separating their views of large agriculture companies from their feelings toward the labelled foods by those same companies. Skepticism of large agricultural companies, coupled with a lack of information about both nutritional content and agriculture mechanism involved in the production of such foods, which has created a need to develop a better connection with the consumer and communicate more effectively on the food nutrient labels (Telg and Irani, 2012). Studies have also shown that scepticism and distrust are

commonalities among the general population, but these traits are also inherent in the young populations and the university students as the case of this study (Taylor and Ketter, 2010).

The overall perception of respondents reported in this study was generally favourable in that their perception of various items is likely to promote appropriate health-seeking behaviour. Majority of the respondents had favourable perception towards food labels. Finally, providing nutrition information also increased healthier purchase intentions and accurate perceptions of nutrient content These findings corroborate those of Falola (2013) and Mensah *et al.*, (2002) regarding the perception of importance of information on food labels.

Previous studies conducted by Drichoutis et. al., 2006 and Silverglade, and Heller, (2010) on the Food Labelling Chaos: as the case for reform have reported a positive relationship between knowledge and perception towards food label use.

Perception regarding food label were positive overall, and this study found that among university students there is a need to promote more favourable perceptions towards food labels, address negative social norms, and equip these students with tools to better understand food labels by promoting self-efficacy.

5.4: Attitude regarding food labels

In this study, majority, (82.4%) stated that they could recommend the use of food labels to friends. Similarly, 67.0% disagreed with the statement "*I do not regard food labels as important therefore I cannot use it to make any decision*". Overall, the attitudinal score of the respondents was good a finding which was in congruence with that of the study conducted by Misra, (2007). which indicated that food label use is affected by the attitudes of consumers towards nutritional content. Similarly, it has been documented that consumers with high health consciousness have positive attitudes towards nutrition labelling and that there exists a potentially significant association between label attitude and food label use.

The overall attitudinal score of the respondents in this study was very high, with the attitudinal score highest among respondents with good knowledge(68.2%). This findings is in agreement with the findings of a study conducted by Campos, Doxey, and Hammond, (2011), where it was established that positive attitudes were higher among individuals reporting greater use of labels (Zeng et al. (2013) with the single best predictor of general label use was a positive attitude

towards labels. indicated that nutrition attitude predicted label use and that label users have a positive attitude compared to nonusers. The findings from this study shows that the attitude towards nutrition knowledge was significantly associated with nutrition label reading. Moreover, many studies have found positive relationships between nutrition label attitude and use behaviour (Cowburn and Stockley, 2005; Chiang, 2008; Lai, 2012).

5.5: Utilization of food labels

The findings from this study reveals that, the majority (73.1%) reported that they use food labels. The proportion that do not use food labels attributed their reasons for non-use to the following; small print (16.0%), not interested (18.1%), don't believe it (12.8%) and no time (12.8%). More (34.0%) stated that they do not have any opinion about food labels. Indicated that respondents who read the nutritional information on food labels were concerned about their personal health. Consequently, it can be inferred that when a consumer has concerns about nutrition and seeks health information, he or she will recognize the importance of nutrition labelling. Individuals with greater health consciousness will have more positive attitudes towards nutrition labelling. This findings is in congruence with that of Kempen Muller, Symington, and Eeden, (2012).

about one third, (35.2%) reported that they read nutritional information sometimes while 21.9% reported that they read the same item always this findings may suggest that nutritional information use may differ among consumers found that due to consumers' different levels of health, nutrition knowledge and attitudes towards reading food labels. This findings is consistent with that of the findings of a study conducted by Ellison, Lusk, and Davis (2013).

Similarly, on NAFDAC number, below half (40.3%) stated that they read it always while 19.1% and 18.0% reported that they read NAFDAC number often and sometimes respectively. Up to 47.3% stated that they read manufactured date of the product always while well over half (58.3%) reported that they read expiry date always. More (35.2%) stated that they read the list of ingredients sometimes. Similarly, 35.2% said they read instructions on food labels sometimes. On storage condition, 31.6% reported that they read it sometimes. This findings may suggest that the use of food may have an important role in communicating product related information to consumers and are considered to have the potential to influence food choice and dietary behaviour of the students. This findings is in agreement with the findings of the study conducted by Mackison, Wrieden, and Anderson, (2010).

On factors that could encourage use of food labels, 36.8% reported that information should be clear, 25.7% stated that information should be readily legible while 19.2% stated that the position of food labels on the packaged food should be considered. It can be inferred from the study that Nigerians university students in University of Ibadan perceive clarity, determination of registration status of food producers, advertisement, legal requirement, knowing the expiry dates and distinguishing food item from that of other competitors as the major reasons why food packages are labelled. This findings is in agreement with that of the findings of the study conducted by Falola, (2013).

More than half (57.1%) of the respondents who had poor knowledge did not use food labels. meanwhile, there was a significant association between the use of food labels and knowledge, use of food labels and perception, and also an association between the use of food labels and attitude. Moreover, willingness to read or use food labels may be influenced by peers of the students. This findings is similar to that of the findings of a study conducted by Haldeman (2013) but contrary to the findings of the study conducted by Nurliyana, Norazmir and Khairil Anuarin 2011 among university students in Malaysia.

5.6 Implication for Health Promotion and Education

The findings of this study have implications for health promotion and education. Majority of the respondents had good knowledge of food label use, however, more than half of the respondents reported erroneously that price of the product could be derived from the food label which points to the fact that their purchasing decision might be influenced by the price tags on the food labels irrespective of the nutritional benefits of such foods hence, they are more likely to purchase cheap unhealthy food choices with possible negative health implications. It was also gathered from this study that, a significant proportion that do not use food labels and they attributed their reasons for non-use to the following; small print (16.0%), not interested (18.1%), don't believe it (12.8%) and no time (12.8%). More (34.0%) stated that they do not have any opinion about food labels. Health promotion and education strategies can be used to tackle some of the challenges identified in this study. Possible health promotion

strategies that can be used include social support, training and advocacy. These strategies will be discussed one by one starting with social support.

5.6.1 Awareness and health education:

There is a need for more awareness programme on the use of food labels on the risk factors associated with food consumption without proper attention to the nutritional labelled instructions. The importance of quality nutrition for healthy living cannot be overemphasized. This is necessary given the fact that the rate at which people suffer from health risks which can result from eating poor diet is very alarming in recent days. Some of these risks are high blood pressure, high body mass index, high cholesterol, high blood glucose, low food and vegetable intake and other Non communicable diseases with a rising prevalence of NCD in Africa. NCDs are more prevalent in occurs in low- and middle-income countries, including Nigeria. This findings is in agreement with the report of a study conducted by WHO in (2009). Similarly, the use of food labels can bridge the health information gap between producers and consumers and aid in consumer's dietary choices (Jordan Lin et al., 2004; Loureiro & McCluskey, 2000).

Health promotion and education strategies can be used to tackle some of the challenges identified in this study. Possible health promotion strategies that can be used include social support, training and advocacy.

5.6.2 Advocacy

Advocacy could be done through methods such as media advocacy and lobbying by interest groups (e.g. non-governmental organisations and civil groups). This could be used in formulating and implementing policies targeted at increasing the awareness of the public on the nutritional content of food by instructing all food manufacturing companies to make use of colour codes to depicts excessively sugary or fatty and dangerous food that are dangerous to the health with a clearly written instructions on such food contents aimed at increasing health awareness of food consumption among the people.

Mass public enlightenment and an increase in awareness could be used to mitigate these health risks through the use of food labels to help people make better food purchase decisions and adopt healthier eating patterns

More awareness should also be made among young people towards an effective food label awareness and usage. Hence, the need for public awareness (using the media such as radio,

television, newspaper, nutrition chats) to enlighten them on food label information such as ingredients used, manufactured date, expiry date and registration number, is very essential for healthy living, prolonged life and active participation in their respective areas of livelihood. (Grunert & Wills, 2007; Mhurchu & Gorton, 2007; Nørgaard & Brunsø, 2009)

5.6.3 Health Education **:** This should be provided to the students on the need for nutritional consciousness by the introduction of such courses in to the school curriculum in order to raise the critical consciousness of the students.

5.7 Conclusion

This study investigated the knowledge, attitude and use of food labels among undergraduate students of the University of Ibadan. The findings of this study indicates that the overall knowledge of the respondents was good, however, some gaps exits in the respondents knowledge on information gotten from the food label as more than half (57.8%) reported erroneously that price of the product could be derived from the food label and more disturbing was the findings that a fourth of the respondents believed that product can still be managed after the expiry date thus pointing to an underlying poor knowledge of expiry date a little attention paid to health.

The findings of this study also revealed that majority of the respondents had a good perception towards food label, however it was disturbing to find out that a little bellow one third of the respondents believed that wrong information in food label is not dangerous to the health. Majority of the respondents who had good knowledge had good perception while less than one fifth of the same population had poor perception. The findings also showed a significant relationship between perception and knowledge of respondents hence, the perception and willingness to read food labels maybe positively influenced by level of nutritional knowledge of food consumers. Similarly, majority of the respondents had a good attitude towards use of food labels and there was also a significant association between the perception and knowledge of respondents and also between attitude and perception of respondents.

Majority of the respondents also had a positive utilization pattern on food label, however, More than half (57.1%) of the respondents who had poor knowledge did not use food labels. The finding of the study revealed that there was a significant association between use of food labels

and knowledge of the respondents thus emphasizing the need to enlighten the public on other benefits of using food labels.

The findings of this study suggest that For undergraduate university students, taste and price may the most highly rated factor when buying food product rather that nutritional labelling. It may due to limited budget, time constrain and just to get energy and full their appetite. However, information concerning the use of food label was limited.

5.8 Recommendations

In view of the constraints identified as limiting the knowledge and use of food labels, the following recommendations have been proffered to enhance better knowledge and use of food labels by the Nigerian undergraduates in Oyo state.

1. There is need to enlighten and sensitize the university students on the benefits of utilizing information on food labels by introducing nutritional education as a part of the GIS curriculum in the universities to determine the nutritional composition of foods, information about quantity to eat/take thus, expanding their nutrition knowledge to select healthy food choices at schools, homes and in restaurants.

2. Regulating agencies should enforce general compliance by manufacturers of foods and food supplements to have all relevant information on food labels in clear terms and the use of colour code to distinguish food products that are harmful to the health.

3.There is an urgent need to barn the advertisement of excessively sugary dinks and foods which may constitute more damage to the public health and the few product that made it way in to the markets should be heavily taxed based on the grams of sugar and the potential harm they may cause to the consumers.

4. There is a need to re-orientate the students that “reading food labels” is one of many strategies, along with controlling portions, making better food choice, exercising getting more sleep, drinking more water in preventing the development of chronic Non communicable diseases in order to live a healthy and fulfilled life.

5. There is a need for a multisectorial collaboration between the federal ministries of health, education, youth affairs and the universities authorities and relevant educators to develop a policy for regulating the distribution of unhealthy foods and drinks in the school and the need for standardization of policies in order adapt uniform food labelling requirements to improve clarity and efficiency

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APPENDIX I

Questionnaire

Dear Respondent,

Good day ma/sir. I am a Postgraduate student of Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan. The purpose of this study is to determine the "**knowledge, perception, attitude and use of food labels among undergraduate students of the University of Ibadan, Oyo state, Nigeria".** This information will be used in developing health intervention programs especially the ones related to nutrition. There are no right or wrong answers to the questions asked or the statements made instead, what is desired of you is your truthful and honest responses. Please note that the completion of this questionnaire is entirely voluntary. All information gathered as a result of your participating in this study will be treated with utmost confidentiality and will be used strictly for research purpose only.

Kindly indicate your willingness to participate or otherwise by ticking [√] in the appropriate box below.

1. Yes ☐ 2. No ☐

Date_____ Serial No _____

SECTION A: SOCIO-DEMOGRAPHIC INFORMATION

Please tick (√) any of the response that apply to you in the options provided or complete the blank spaces provided as applicable.

1. Age in years as at last birthday_____
. Sex: (a). Male ☐ (b). Female ☐
3. Religion (a). Christianity ☐ (b) Islam ☐ (c). Traditional ☐
   (d). others, please specify_____
4. Marital Status (a). Single ☐ (b). Married ☐ (c). Divorced ☐ (d). Widow ☐
   (e). Separated ☐ (f). Cohabiting ☐
5. Residence: (a) On campus ☐ (b) Off campus ☐
6. Level of study (a). 100 Level ☐ (b.) 200 Level ☐ (c). 300 Level ☐ (d). 400 Level ☐
   (e). 500 Level ☐

6 Department /Course of study: Please specify_____

6b. Faculty: Please specify_____

7. Ethnic Group: (a). Yoruba ☐ (b). Hausa ☐ (c). Igbo ☐Others (Please specify).....

8a. What is your income from all sources (Stipends, Pocket money, gifts, money from small businesses etc) in a month?_____Naira

8b. In a month, what is your total income from all sources (in Naira) _____

SECTION B: KNOWLEDGE OF STUDENTS ON FOOD LABELS

Please tick (√) any of the response that apply to you in the options provided or complete the blank spaces provided as applicable.

9. Which of the following best explains food label on a packaged food product?

(a) All written components on the packaged food product1☐

(b) The on the packaged food product Nutrition information ☐

(c) The manufacturer name and address on the packaged food product ☐

(d) Just the instruction for use on the packaged food product ☐

(e) Others, please specify _____

What do you understand by the word 'Expiry date'? (a) It means a date after which the product cannot be consumed (b) product can still be managed after the date (c) Same as manufacture date (d) others, please specify

_____

10. Which of the following should be components of food labels.

S/N	Components	Yes	No	Don't Know
10.1	List of ingredients			
10.2	Name of manufacturer			
10.3	NAFDAC number			
10.4	Manufactured date			
10.5	Expiry date			

10.6	Generation instruction for use			
10.7	Nutrition information			
10.8	Net contents and drained weight (Liquid foods–volume, solid foods – weight)			
10.9	Country of origin			
10.10	Name of packaged food			

11. Do you know what "best before" means? (a) Yes ☐ (b) No ☐ (c) Don't Know ☐

If Never, skip question 12

12. What does 'best before' mean? (a) It means expiry date of the product ☐ (b) product can still be managed after the date ☐ (c) Same as manufacture date ☐ (d) others, please specify

_____

13 Based on the components of the food label, what information can you get from the food label?

Please tick (√) the correct answer below

S/N	Information	Yes	No	Don't Know
13.1	Standard of the product			
13.2	Nutritional label/details			
13.3	How to use food product			
13.4	Life span of the product			
13.5	Price of the product			

14. Do food labels have an effect on nutritional awareness? (a) Yes sometimes ☐

(b) Yes always ☐ (c) Never ☐

Does the information contained on food labels have an effect on your nutritional alertness

15. Do food package convey sufficient information on the nutritional value, serving size, calories, nutrients and grams of fat contents to you. (a) (a) Yes sometimes ☐

(b) Yes always ☐ (c) Never ☐

16. Does the information contained on the list of nutrients help you to restrict intake of certain nutrients that you may be allergic to. (a) Yes sometimes ☐ (b) Yes always ☐ (c) Never ☐

17. Does the information contained on the list of nutrients help to promote the consumption of certain nutrients that you or some individual may require in sufficient quantity. . (a) Yes sometimes ☐ (b) Yes always (c) Never ☐

18. Does the food package and label convey meaningful information on the company name and address, the expiry date, serving size, calories, nutrients and grams of fat contents to you .

(a) Yes sometime ☐ (b) Yes always ☐ (c) Never ☐

19. Which of the following items are contained in the nutritional details found in the food label?

S/N	Items	True	False
15.1	Serving size		
15.2	Number of calories		
15.3	Grams of fat		
15.4	Nutrients		
15.5	Ingredients		
15.6	Manufacture date		
15.7	Instruction on storage		

20. Can nutritional information on food labels lead to better management of some diseases?

(a) Yes ☐ (b) No ☐ (c) Don't Know ☐

If no skip Q21

21. How can the information relating to nutrition details be helpful? *(Tick the correct answers)*

(a) Information could help individuals restrict intake of certain unfavourable nutrients ☐

(b) Those trying to get enough nutrients could make use of the information gotten from the nutritional details ☐

(c) The information could be helpful in managing some diseases ☐

(d) The information cannot be helpful at all ☐

SECTION C: PERCEPTION OF STUDENTS REGARDING FOOD LABELS

Please tick (√) any of the response that apply to you in the options provided or complete the blank spaces provided as applicable.

S/N	Statements	Yes	No	I don't kno
21	Food labels are not important			
22	The information contained in the food labels should be made suitable to read			
23	Food labels could help guide against certain diseases			
24	Wrong information in the food label is not dangerous to health			
25	The durability of a food product could be deduced from the food label			
26	All food labels are easy to understand			
27	Friends and peers can influence one's decision to use food labels			
28	food labels are subject to regulations			
29	regulations regarding food labels are sufficient enough/being enforced to enhance the promotion of credible information			
30	The use of food labels by friends and relatives cannot make one use food labels			
31	Reading food labels wastes time			
32	Information on food labels could be			

	misleading			

SECTION D: ATTITUDE OF STUDENTS REGARDING FOOD LABELS

Please tick (√) any of the response that apply to you in the options provided or complete the blank spaces provided as applicable.

S/N	STATEMENT	Agree	Disagree	Undecided
33	I can recommend the use of food labels to my friends			
34	I do not regard food labels as important therefore I cannot use it to make any decision			
35	I can purchase packaged food product without reading the food label			
36	Even if am advised on the importance of food labels, I cannot use it			
37	I can only make use of the food labels because of the NAFDAC number as it is the only important item on it			
38	My friends can influence my decision to use food labels			
39	Information presented on food labels are sometime not correct so I cannot use food labels			
40	I prefer the use of food labels as it makes me conscious of my health			
41	I trust the information on food labels enough to make a health decision			

SECTION E: RESPONDENTS USE OF FOOD LABELS

Please tick (√) any of the response that apply to you in the options provided or complete the blank spaces provided as applicable.

42. Do you read food labels before when shopping for any food product (a) Yes ☐ (b) No ☐ (c) Don't Know ☐

If yes, skip Q43 and Q44

43. What are your reasons for not reading information on food labels (a) Small print ☐

(b). I do not believe it ☐ (c). Not interested ☐ (d). Do not understand ☐ (e) No time ☐

(f) No opinion ☐

44. With more enlightenment, do you intend to start using food labels effectively? (a) Yes ☐

(b) No ☐ (c) Don't Know ☐

45. Do you consider the expiring dates of the products that you buy (a) Yes ☐ (b) No ☐
(c) Don't Know ☐

46. When do you read the food label of the food product you purchase? (a) Before buying the food product ☐ (b) After buying the food product at the food store ☐ (c) When you get home from the food store ☐ (d) others, please specify _____

47. How often do you read the components of the food label listed below?

S/N	STATEMENT	Never	Rarely	Sometimes	Often	Always
48.1	Nutrition information					
48.2	NAFDAC number					
48.3	Manufactured date					
48.4	Expiry date					
48.5	List of ingredients					
48.6	Instructions on food label					
48.7	Storage condition					

Instruction: *The questions below contains a set of statements on your use of nutrition information under the food label. Please tick (√) the most suitable answer*

49. Which of the following nutrient do you look out for whenever you check the nutrition information under the food label..

Instruction: *Please tick (√) the most suitable answer.*

(a) Total Energy ☐ (b) Carbohydrate ☐ (c) Vitamins ☐ (d) Minerals ☐

(e) Protein ☐ (f) Fat ☐ (g) None ☐ (h) Others, please specify _____

50. Does the food label on a product influence your decision to purchase it? (a) Yes always ☐
(b) Yes sometimes ☐ (c) Never ☐

51. Do your friends or peers make use of food labels? (a) Yes ☐ (b) No ☐ (c) Don't Know

52. What are the factors that could encourage the use of food labels? *(Tick all correct answers)* ☐

(a.) Information should clear ☐ (b.) Readily legible ☐ (c.) Not obscured by any written printed or graphic matter ☐ (d.) Position on the packaged food ☐

(e.) Other please specify _____

SOCIAL SCIENCES AND HUMANITIES RESEARCH ETHICS COMMITTEE (SSHEC)
UNIVERSITY OF IBADAN
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NOTICE OF FULL APPROVAL AFTER FULL COMMITTEE REVIEW

Re: Knowledge, Perception, Attitude and Use of Food Labeling Information among Undergraduate Students of the University of Ibadan, Oyo State, Nigeria.

UI/Social Sciences Ethics Committee assigned number: **UI/SSHEC/2016/0047**

Name of Principal Investigator: **Kikelolmo Oluwafisayo EGBEKUNLE**
Address of Principal Investigator: Dept of Health Promotion and Education,
Faculty of Public Health,
University of Ibadan.

Date of receipt of valid application: **02/11/2016**
Date of meeting when final determination on ethical approval was made: **11th April, 2017.**

This is to inform you that the research described in the submitted protocol, the consent forms, and other participant information materials have been reviewed and given full approval by the SSHE Committee.

This approval dates from **11/04/2017 to 10/04/2018**. If there is delay in starting the research, please inform the SSHE Committee so that the dates of approval can be adjusted accordingly. Note that no participant accrual or activity related to this research may be conducted outside of these dates. All informed consent forms used in this study must carry the SSHE Committee assigned number and duration of SSHE Committee approval of the study. It is expected that you submit your annual report as well as an annual request for the project renewal to the SSHE Committee early in order to obtain renewal of your approval to avoid disruption of your research.

Note: the National code for health research ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the Code including ensuring that all adverse events are reported promptly to the SSHEC. No changes are permitted in the research without prior approval by the SSHEC except in circumstances outlined in the Code. The SSHE reserves the right to conduct compliance visit to your research site without previous notification.

Prof. A.S. Jegede