THE EVALUATION OF FOOD LABELS AND STUDENTS' INTERPRETATION AND USE OF FOOD LABELS

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Dissertation submitted in accordance with the requirements for the
Magister Scientiae (Home Economics) degree

In the

Faculty of Natural and Agriculture Sciences

Department of Consumer Science

At the University of the Free State

JUNE, 2012

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DEDICATION

This work is dedicated to my only daughter Olerile 'Leri' Mmopelwa who constantly gave me strength, support, love and words of encouragement to complete my studies. You have always been my motivation and inspiration. You should always encourage me to try my best and work towards achieving my goals. I owe everything to you. I love you.

ACKNOWLEDGEMENTS

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CHAPTER 1 - INTRODUCTION

1.1 BACKGROUND AND MOTIVATION

Recently, there is a trend towards healthy eating, which lead to consumers becoming more aware of food labels. This trend has highlighted the importance of food labeling and has also influenced consumers to make good and informed food choices (Coulson, 2000:662). Food labels act as source of information that aid consumers to understand product attributes, help sell the product (Cheftel, 2005:531and Peters-Texeira and Badrie, 2005:511) and forming quality expectations which influence their purchasing behaviour (Grunert, 2002:276). Furthermore, food labels act as a link between the producer and the consumer, thus, should be part of the marketing plan of the producer (Prathiraja and Ariyawardana, 2003:36).

The use of food labels is growing and consumers' use of nutritional knowledge and healthy eating patterns is improving (Leathwood, *et al.*, 2007:474). South Africa has released new food labeling regulations on 01 March, 2010 enforced on 01 March, 2011. The new regulations address the issue of informing consumers, promote their health and protect them against deception. However, Coulson, (2000:662) stated that, it is unclear if consumers understand and use food labels properly. Previous studies in five European countries: Belgium, Denmark, Netherlands, Poland and Spain revealed that food labels may be of little use due to lack of knowledge and low ability to interpret them (Pieniak, *et al.*, 2007:1051).

Although there is growth in use of food labels, there will always be those consumers that do not read labels. Consumers just become aware of them without any extensive interpretation (Higginson *et al.*, 2002:151). The use of food labels has been examined previously in UK and it is evident that there is little guidance in understanding and encouragement in consumer's reading (Coulson, 2000:662) and utilization of food labels (Nørgaard and Brunsø, 2009:597). Furthermore, the importance of food labeling is to act as product communication which allows consumers the chance to vigilantly consider the options of making food choices (Silayoi and Speece, 2007:1499).

However, research done in Canada on food label use focused mainly on adult consumers but none specifically among university student consumers (Smith, *et al.*, 2000:175). Thus the conduction of the present study focusing mainly on whether university students interpret and use food labels accurately. Students are considered a group that keep themselves up to date on modern technology and development and they tend to be critics in nature. Labeling of packaged food items is of vital importance to consumers. Food labeling might refer to the naming of a product or listing of ingredients (Peters-Texeira and Badrie, 2005:511) as source of information to consumers in making food choices.

Families do not always make healthy food choices; their children influence them in buying unhealthy foods such as those with high sugar and fat content (Nørgaard and Brunsø, 2009:597). Therefore, this might have an impact on the consumer's proper food choices and influence their understanding and use of food labels. According to Singla (2010:83), the consumers' understanding of food label is lessened by the complex array of information on pre-packaged food which distances the consumer from the knowledgeable sources of food information. Even though consumers say that they use labels, there has been evidence that labels may not be used, and that they may be misunderstood (Grunert and Wills, 2007:385).

Packaging information availed to the consumers can lead to confusion and misinterpreted by misleading them with too much or inaccurate information (Silayoi and Speece, 2007:1500 and Borgmeier and Westenhoefer, 2009:185). However, Grunert and Wills (2007:386) affirmed that, consumers seem to understand certain key terms of food labels and also use them accurately, but misunderstanding rises with intricacy of the information and the task to which it should be applied. Furthermore, the amount of information presented on food labels can result in consumers' misinterpretation of this information (Wansink *et al.*, 2004:661). Pieniak, *et al.* (2007:1051) further mention that, there is risk of information overload resulting from consumer misunderstanding of too much information on product packages. However, research about the type of information consumers look for on labels and how they use food labels is lacking (Pieniak, *et al.*, 2007:1051). The limited available information about the understanding and use of food labels in South Africa necessitated the carrying out of the current study.

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1.2 PROBLEM STATEMENT

Food label regulations prescribe the use of food labels according to set specifications to protect the consumer but it is unknown whether the South African consumer interprets the food label to the extent that it can benefit him/her. The presumption is that proper food labeling should lead to better food choices. It appears that the simple stipulation of label information on food products is unsatisfactory to motivate consumers to utilize that information in making food choices. Label information on food packaging is often difficult for consumers to understand during food purchasing and preparation. To some extent consumers just become aware of food labels without extensive interpretation which can often lead to confusion and misinterpretation thereof. Nowadays, student consumers are generally having control over their food choices and even influence their parents when making food decisions. They tend to live independently when at the university and doing their own food purchasing and preparation thus developing food choice skills. The assumption is that university students are more concerned with healthy eating lifestyles but still to some extent misinterpret food labels. Some courses offered at the university level covers the topic on food labeling. Though they might gain the knowledge on food labeling, they might still misinterpret or not use food labels. Research conducted recently in South Africa on food labels has focused mainly on consumers' perception. The study mainly determined consumer's general awareness, importance, interpretation and attention paid to food labels by focusing on label information, visuals and positioning of food labels. No scientific researches in South Africa have specifically looked at the evaluation of food labels and students' interpretation and use of food labels. Therefore, the current study is focusing on evaluating of the student's interpretation and use of food labels and with the introduction of the new South African food labeling regulations making this study feasible.

1.3 AIM, OBJECTIVES AND HYPOTHESES

1.3.1 Aim

The aim of this study was to determine if university student consumers interpret and use food labels accurately.

1.3.2 Objectives

The purpose of this study was to,

> determine the use of general information on food labels by university student consumers.

> determine whether male and female university student consumers know the meaning of all items on a food label.

> determine the importance attached to the various details included on a food label.

> determine whether the food labels comply with the new South African food regulations.

1.3.3 Hypotheses

The following hypotheses are proposed:

H1: Male and female university student consumers read food labels.

H2: Male and female university student consumers interpret food label information correctly.

H3: Male and female university students perceive label details important.

H4: Food labels abide to the new food regulations in South Africa.

1.4 COGNITIVE THEORETICAL PERSPECTIVE

This study was approached from a cognitive theoretical perspective. The cognitive theoretical perspective focuses on consumers' thinking processes through which they use and retrieve information (Kaiser, 1990:32). Therefore, the reason why this perspective is considered to be the most appropriate one is that it deals with the consumers thinking process and retrieving of information and this is what the study intends to find out. The current study determines to evaluate the university students' interpretation and use of food labels. Therefore, if the university student consumers are educated by the food industry, they may be able to read and interpret food label information accurately and make informed food purchasing decisions.

The South African consumer protection bill (2008:27-36) claim that the consumer has the right to be informed, the right to choose and the right to fair and honest deal. The right to be informed implies two aspects, that is, to be informed by the food label information and the right to knowledge through consumer education to be enabled to interpret the label information. Furthermore, both voluntary and mandatory labeling can be provided in order to recognize these rights so as to assist consumers to make proper food choices (Vidar, 2010:17) and for the student consumers to retrieve the information from the food label and process it appropriately.

Cognitive theoretical perspective refers to the knowledge of the individual and it assumes the decomposability of complex systems into a set of subsystem (Akkerman, *et al.,* 2007:45,53). Thus, the cognitive theoretical perspective assume that the student consumer will be studied as an individual subset on the way they would receive the food label information and process it in order to interpret and use it accurately. The cognitive theoretical perspective is used in this study because it deals with the knowledge and thinking capacity of the student consumers. A consumer has to be well informed in order to make right food choices, which are well labeled, safe and of good quality. During food purchasing, consumers make informed decisions regarding food products (Peters-Texeira and Badrie, 2005:508) and processing of product information has to be at the level of their understanding (Leathwood, *et al.,* 2007:474). Effective food labeling informs consumers, and act as a source of information (Cornelisse-Vermaat, *et al.,* 2008:669). Therefore, all food attributes should be correctly labeled (Sanlier and Karakus, 2010:141) in order to inform the consumers.

In 01 March, 2010, South Africa passed the new food labeling regulations for the food industry and it was implemented on 01 March, 2011. The regulations want the food industry to supply the label information that is comprehensible and conspicuous to the consumers. For consumers to understand information provided on food labels, they have to read and interpret it correctly (Cowburn and Stockley, 2005:22). In order to provide effective interpretation and use of food labels with regard to the new South African food labeling regulations, there has to be ways in which consumers will learn them.

Learning activities can be planned to induce effective learning of these new regulations and new food information on food labels. Singla (2010:83) stated that, in the past food labeling was limited to food name, quantity, price and identity of the manufacturer. However, recently consumers demand detailed, accurate and accessible information on food labels (Ali and Kapoor, 2009:725). Grunert and Wills (2007:386) stated that, consumers seem to understand certain information of food labels and also use them accurately, though there may be misunderstanding of other information. Excessive information provided on food labels lessens the understanding of food labels (Singla, 2010:83).

Nørgaard and Brunsø (2009:4) affirmed that, consumers sometimes perceive food label information as misleading due to the technical and complicated nature of the label information. However, Grunert and Wills (2007:390) stated that, the perception of the information presented on food labels will influence their correct interpretation thereof, but misinterpretation will also influence their perception of the product. The result of food labels not effectively used by the consumers suggested that there is a need for consumer education on the interpretation and use of food labels to guide purchasing decisions.

Perception entails a process of selection, organization and interpretation of information in a meaningful way (Schiffman and Kanuk, 2007:152). When consumers misinterpret food labels, they form perceptions about them. Consumers may differ in the way they interpret the same stimulus, based on their individual needs, values, expectations (Schiffman & Kanuk, 2007:152). In this view, values, beliefs and meanings about food labels were looked into critically especially on ways of informing the consumer of the new South African food labeling regulations and the new information on food products from 01 March, 2011 and educating them.

Consumer Education is a way of providing consumers with skills and knowledge in order to enable them to use their resources effectively as well as to assist them in the market in a critical way and make positive food purchasing decisions (SAinfo reporter, 2010:1). The new food labeling regulations would be of little use if the consumers are not educated to understand it. Therefore, the South African food industry and the Department of Consumer Affairs must educate the consumers on the new food labeling regulations and label information through different agencies in order to inform them. Interpretational aids such as websites, leaflets, phones and community information (Cheftel, 2005:532), mass media, books, advertisements, education programmes and medical advice (Ali and Kapoor, 2009:725) can be used. Though advertising increases the market for an individual product (Verbeke, 2005:357), media is considered as the most vital source of information (Pieniak, *et al.*, 2007:1050 and Verbeke, 2005:357).

The National Consumer Forum (NCF) of South Africa under the Department of Consumer Affairs has introduced the Consumer Fair newspaper which is published every two months to address issues of interest to the consumers such as that of new food labeling regulations. Furthermore, the NCF has a website which consumers with internet can use to access

information on the NCF news, with statements and prints of radio and television programmes can be downloaded. The NCF also have campaigns and also commemorate the World Consumer Rights Day annually to teach consumers about different issues where the new food labeling regulations can also be tackled. Consumer Education informs the consumers about their choices and it is of vital importance to educate consumers on the new food labeling regulations so that the consumers will be knowledgeable and will be able to make good food choices and complain where possible.

With all the above mentioned possibilities, it could be expected that South African consumers should be well informed. The objectives of this study were to determine the use of the general information on food labels, whether university student consumers know the meaning of all items on a food label, the importance attached to the various details included on food labels and whether the food labels comply with the new South African food labeling regulations. Ultimately, the research aimed to determine within a group of South African male and female student consumers in the Free State Province if they interpret and use food labels accurately. The results of this study will indicate whether the young South African consumers are well educated to interpret food labels correctly to enable them to make positive food purchasing decisions on grounds of true label information on food products.

1.5 CONCEPTUAL FRAMEWORK

Figure 1 presents a conceptual framework of consumers' evaluation of food labels and the interpretation and use of food labels, which was adapted from the perceptual process as proposed by Solomon (2007:49) based on the literature review following this framework and the objectives of this study. During food purchasing, consumers are exposed to food labels which are presented to them as written label information and visual presentations such as symbols or logos. As consumers' become aware of such labels, they recognize them as important whether it is during the purchasing of the food item for the first time or with every purchase and use. The Department of Health released the new South African food labeling regulations in 01 March, 2010 (GNR 146). The regulations focuses on improving consumers' health through healthy food choices based on the latest available information. The new regulations effected on the 01 March, 2011 and the food industry has to comply with it by correct implementing of the regulations.

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According to the new regulations, food labels must be labeled in English and where possible, any other of the South African languages, the label must also have the product name, producer name and address, country of origin, batch number, date mark, list of ingredients, Quantitative Ingredient Declaration (QUID), storage instructions, pictorial representation, food additives and allergens, nutritional information and nutrient claims (GNR 146, 2010:15-40). During food purchasing, consumers make decisions based on the information they get from food labels. Therefore, with the introduction of the new food labeling regulations, consumers have the right to be informed. It is the mandate of both the food industry and the Department of Consumer Education to educate them.

Consumers can be informed through media, seminars, pamphlets, websites, leaflets, phones, advertisements and community information centres (Cheftel, 2005:532 and Ali and Kapoor, 2009:725). Sources of food labeling information influence consumers' behaviour since they will be able to interpret and use food labels accurately or inaccurately. Food labels transmit information on food attributes and health-related food benefits unfamiliar to the consumers. Therefore, behaviour is often based on consumers' positive or negative interpretation and use of food labels.

Food labels act as extrinsic cues to the consumers which they base their purchasing decisions on. During product purchasing, consumers are exposed to the label and they look for important information in order to valuate the product especially for the products they purchase for the first time. They then form attitudes towards the product, for example, if they find the product valuable, they develop interest towards it but if they do not value it they discontinue buying it. Consumers tend to easily interpret food labels on products that they highly valuate. During food label interpretation, consumers use previous knowledge and any new information they will find on the label about the product. There will be high demand of food with labels that are accurately interpreted and that bring positive feedback to the food industry, but for those that are dissatisfying the demand will be low and consumers will select another product.
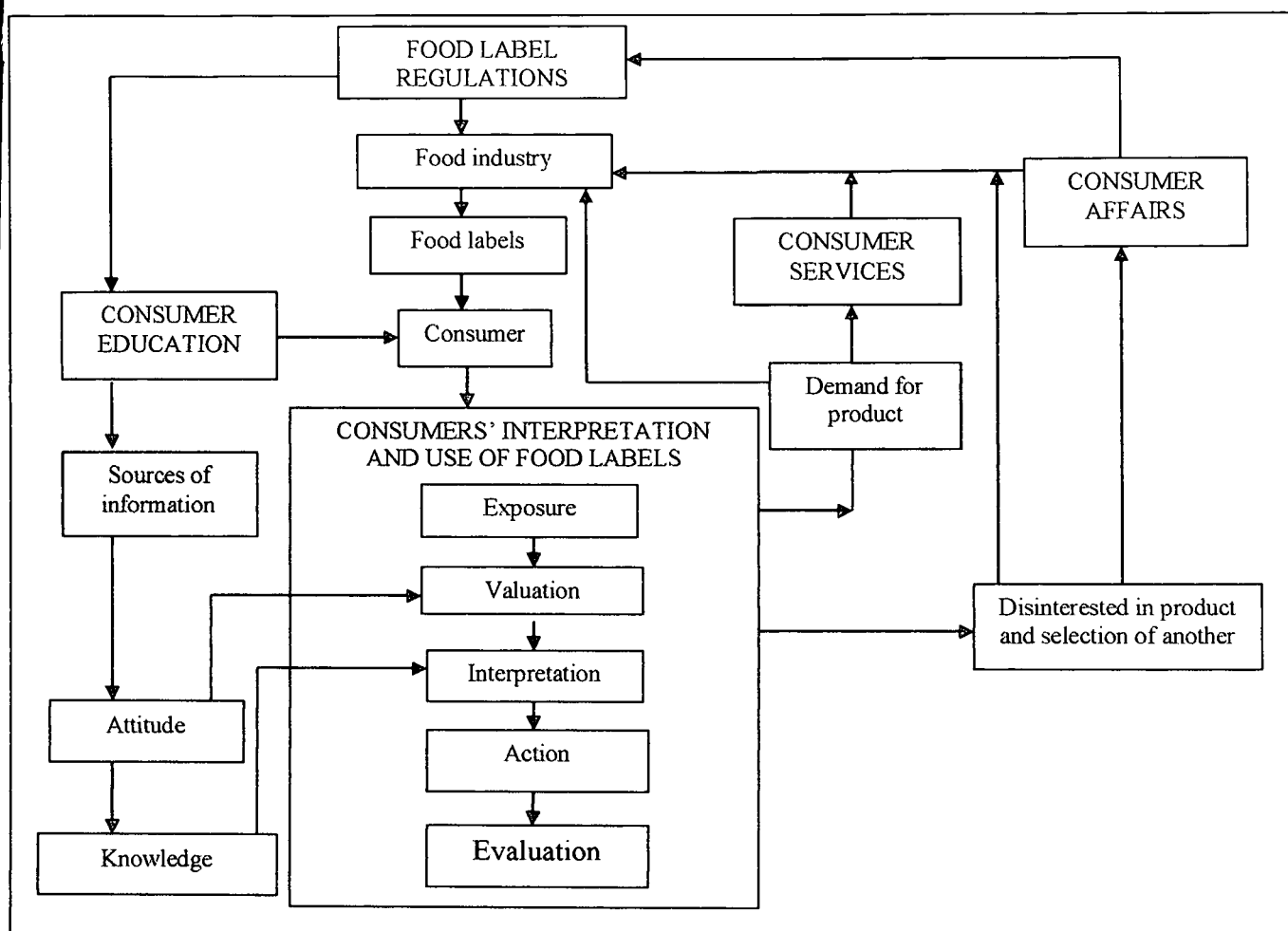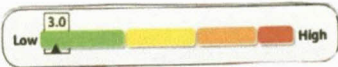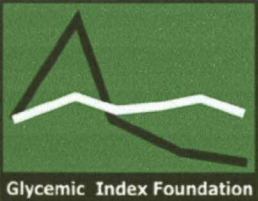
Figure 1: Conceptual framework of consumers' evaluation of food labels and the interpretation and use of food labels (Solomon, 2007:49).
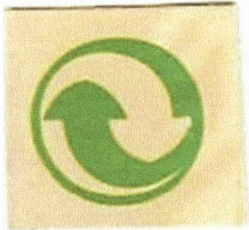
1.6 THE SYMBOLS/LOGOS USED IN THIS RESEARCH PROJECT

The following are some of the images of symbols/logos found on food labels and are used in this research project to evaluate the university students' interpretation and use of information they get from them. Furthermore, the symbols/logos are used to determine how important they are to the university students, whether they understand, use the GIFSA logo and how they perceive it. Some of the symbols/logos are religious such as the 'Halaal' and Bfs/ucD Milchik certification while the rest are just for general healthy eating. The purpose of this information is to highlight on the meaning of each symbol/logo which can be used by the consumers during food

purchasing so that they can be able to read, understand and interpret them well and make proper food choices. Therefore, the table below present the images of the symbosl/logos and the information about their meanings reviewed from literature:

	SYMBOL	INFORMATION
1		The rBST free symbol/logo indicates that the milk product is tested to be free of the rBST hormone thus; the cows have not been given the hormone to increase their milk production. This hormone is considered harmful to people (Clover, 2010:1).
2	**Saturated fat index**	Saturated fat is found in animal products such as full cream dairy products and palm kernel oil that might cause cholesterol, thus, have to be used sparingly and therefore products should be labeled to indicate whether as low fat of 1.5g per 100g in solids or 0.75g per 100ml of liquids and 0.1 trans-fat combined per 100g (Ketterer (2010:1). Furthermore, low in saturated fat help raises the bad Low-density lipoprotein (LDL) cholesterol in your blood and has been linked to increased risk of coronary heart disease. It is recommended that people consume less than 10 percent of calories from saturated fatty acids (Evans, 2008:1). Therefore, the symbol indicates that the saturated fat index is at low.
3		The Jewish use the Bfs/ucD Milchik certification on food labels to inform consumers that there is no meat derived ingredients in their dairy products because their religious rules does not allow them to eat meat and dairy combined (Clover, 2010:1).

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4		The Guideline Daily Amounts (GDA) shows the amount in grams and percentages for energy, sugar, fat, saturated fatty acids and salt per serving (Feunekes, *et al.*, 2008:58).
5		South African Bureau of Standards (SABS) approved mark scheme is a highly recognizable symbol of credibility and a powerful marketing tool, which reinforces a product's intrinsic features and the use of the SABS Mark on a product, strengthens point-of-sale impact and gives it greater prestige in the market place. The product bearing the SABS mark conforms to a specific South African or International standard (The SABS Auditors, 2010:1).
6		Heart Mark products are supposed to be tested and meet certain nutritional criteria as stipulated by the Heart and Stroke Foundation such as the product should be low in saturated fat, cholesterol, sugar and sodium and where relevant high in fibre (Ketterer, 2010:1).
7		Halaal certification logo is a way the Islam certify to consumers that the product does not contain pork derived ingredients or alcohol, because according to their religious laws they cannot consume these products (Clover, 2010:1).
8		The GIFSA logo appears on selected products that comply with strict specifications and indicates that the endorsed food is healthy, has a lower fat content, a Glycemic Index (GI) rating and reduced sodium. Foods are rated according to their GI and their effect on overall health in respect of total fat, saturated fat, sodium, fibre and sugar content. The endorsed products are recommended as being healthy and suitable for

		people suffering from any of the diseases of lifestyle. The 'green' mark certifies that the product has a minimal effect on blood glucose, cholesterol and/or blood pressure levels (Delport and Steenkamp, 2010:1).
9		This is allergy warning symbols which product that contain milk, wheat and gluten substances must be labeled with to warn consumers allergic to these substances not to consume the product (Lapid, 2008:1).
10		Low-GI products indicate that products may reduce the risk of diabetes, cardiovascular disease, metabolic syndrome, chronic inflammation and possibly some types of cancer (Wolever, *et al.*, 2008:247S). A Low GI food releases glucose slowly and steadily into the bloodstream without over stimulating the pancreas to produce too much insulin. Lower fat, Low GI indicates that the GI: value ranges from 0-55 (Delport and Steenkamp, 2010:1).
11		The Green Dot symbol is a trademark used in order to minimize the use of packaging material and to create packaging that is easier to recycle. It was originally developed in 1991 in Europe and the presence of it on packaging indicates that the manufacturer of the package has purchased a license for the right to use the 'green dot'. The symbol refers to the packaging itself, and not the items inside (Anderson, 2010:1).
12		If a food is labeled with the suitable for vegetarian symbol, this means that the food does not contain any meat or animal-derived additives such as gelatine (a gelling agent derived from animal ligaments, skins, tendons, bones, etc.), in the case of cheese, it means that animal-derived rennet has not been used to make it

		(Food Standards Agency, 2004:1).
13		If a product bears a certified 100% organic symbol, it indicates that it is produced entirely from organic raw materials and does not include pesticides though it does not indicate whether or not the product has genetically modified food ingredients. A 100% Organic product must not contain pesticides and must contain all organic ingredients except water and salt and all ingredients must be listed on the label. The food company must be certified by an agency recognized by the United States Department of Agriculture (USDA) as a certifying agency though agencies vary by state but all must adhere to the standards set by the USDA which include a long list of chemicals that are not allowed in organic farming (Holmes, 2007:2). In South African, organic products are certified by Afrisco/Ecocert, who annually inspects producers for certification (Vermeulen and Bienabe, 2007:11).
14		The ECOCERT label is a mark of recognition for professionals wishing to place emphasis on superior quality and is one of the world leaders in the certification of organic farming products (Ecorcert Professionalism and Services, 2010:1).
15		The naturally antioxidants symbol is found on products such as Rooibos tea which is grown in South Africa. Antioxidants are substances that are found from vitamins (A, C, E), minerals (copper, zinc, selenium) and vitamin-like substances such as ubiquinones and bioflavonoids to protect consumers from damage caused by free radicals which are produced in the

		human body as part of its normal metabolic processes and are needed to relieve stress and cure certain illnesses (Ketterer, 2010:1).
16		A product with a high in dietary fibre symbol means that when the product is eaten with adequate fluid the food moves quickly and relatively easily through the digestive tract and helps it function properly and the product may also help reduce the risk of heart disease and diabetes (Mayo Clinic staff, 2010:1). There is no recommendation for the right amount of fibre to consume, but the range is from 25g to 38g where a smaller woman can aim for the lower number and an active man for the higher (Lambert, 2006:1 and Mayo Clinic staff, 2010:1).

1.7 ABBREVIATIONS

EU – European Union

FALCPA – Food Allergen Labeling and Consumer Protection Act

FAO – Food and Agriculture Organization

FDA – Food and Drug Administration

FFDCA – Federal Food, Drug and Cosmetic Act

g – grams

GDA – Guideline Daily Amounts

GI – Glycemic Index

GIFSA – Glycemic Index Foundation for South Africa

GNR – General Notice Regulations

KJ – Kilojoules

LDL – Low Density Lipoprotein

mcg/μg - micrograms

mg – milligrams

MSG – MonoSodium Glutamate

NCF – National Consumer Forum

NLEA – Nutrition Labeling and Education Act

NRV'S – Nutrient Reference Values

QUID – Quantitative Ingredient Declaration

rBST Hormone – recombinant Bovine SomaTotropin hormone

SABS – South African Bureau of Standards

SPSS – Statistical Package for Social Sciences

UK – United Kingdom

US – United States

USA – United States of America

USDA – United States Department of Agriculture

WTO – World Trade Organization

1.8 STRUCTURE OF THE STUDY

This study consists of five chapters, including this introductory chapter which provides the background and motivation, problem statement, aim, objectives, hypotheses, theoretical perspective, conceptual framework, the symbols/logos used in this research project and abbreviations. The second chapter provides the literature, which focuses on the concept of food labeling, that is, history of food and nutrition labeling, the importance of food labels, current food laws with regard to labeling of food, by discussing both the mandatory, voluntary food labeling regulations in South Africa and other countries. Furthermore, chapter two will also present the South African food label symbols/logos, sources of labeling information, consumer understanding and use of food labels as well as food labeling information consumers' use. Chapter two concludes with the summary that round off the chapter and link it with chapter three.

The methodology used in this study is discussed in Chapter three. This includes the research strategy, study population and location, sampling method, data collection, pilot study, data analysis, ethical consideration, reliability, validity and statistics. This study used a quantitative research approach which is a positivism paradigm to critically evaluate food labels and students'

interpretation and use of food labels. The University of the Free State students in Bloemfontein were used for data collection through the use of a questionnaire which was first pilot tested in the Department of Consumer Science for reliability and validity. The university students were random sampled to generalise the results among the university students consumers and data collected was analysed statistically. The results are presented in Chapter four and discussed with reference to the relevant literature. In Chapter five conclusions and recommendations are drawn from the results.

The next chapter will consist of the review of relevant literature and a critical discussion thereof.

CHAPTER 2 - LITERATURE REVIEW

2.0 INTRODUCTION

The literature review discusses issues surrounding the history of food and nutrition labeling and the importance of food labels. The literature will also focus on the current food laws with regard to labeling, by discussing both the mandatory, voluntary and other food labeling regulations in South Africa and other countries. The South African food label symbols/logos, sources of labeling information, consumer understanding and use of food labels as well as food labeling information consumers' use will also be presented in this chapter.

2.1 HISTORY OF FOOD AND NUTRITION LABELING

Food labels existed for a long time where the labeling materials were unique and personalized to identify the producer (Rumble, *et al.*, 2003:417). Before food labeling was regulated in 1994, food manufacturers used to basically label their products arbitrarily and actually in small print (Scott, 2008:1). Food legislation in the past used to be for the eradication of fraudulent practices and adulteration of foods (Przyrembel, 2004:360). Literature indicated that, food labels are in recent years intended to promote and protect health of consumers by providing accurate nutritional information so that they can make informed food choices (Ali and Kapoor, 2009:725).

2.1.1 The European Union (EU) food labeling

The European Union (EU) food labeling had three aims that were, to inform and protect the consumers and for fairness in trade (Przyrembel, 2004:360). On the other hand, food labeling bodies such as national laws, international norms and guidelines prohibited labels that contempt the quality of the product and deceives consumers (Albert, 2010:1). Therefore, food labels should provide information about the product (Rumble, *et al.*, 2003:417) since they act as an effective instrument to disseminate information between producers and consumers (Ali and Kapoor, 2009:725). Taylor and Wilkening, (2008:437) revealed that, despite the growth of food labeling, a problem arouse concerning the trustworthiness of food label information which confused and mislead consumers. In an effort to avail trustworthy information to consumers, the EU provided an elaborated legal framework about food labeling which presented reliable and practical labels for consumers to make healthy food choices (Drichoutis, *et al.*, 2005:93-94). In

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November 2005, a new EU directive required the food industry to list egg, milk and dairy products, fish, gluten, peanuts, tree nuts, crustaceans, soy, celery, sesame seed, sulphites and mustard as allergens present in food products (Cornelisse-Vermaat, *et al.*, 2008:669).

2.1.2 The United States (US) food labeling

The US started the nutrition labeling of foods as overseen by the Food and Drug Administration (FDA) in 1970s (Taylor and Wilkening, 2008:437). In 1990, the US Nutrition Labeling and Education Act (NLEA) was passed to make nutrition information on food labels easier to understand and enable consumers to compare foods more easily by nutrient content (Taylor and Wilkening, 2008:437), which was implemented in 1994 (Rumble, *et al.*, 2003:421). Furthermore, the NLEA entailed that food products should bear the mandatory nutrition facts panel on their labels and also comprise of rules for voluntary claims that describe the nutrient content and health impacts of food products (Caswell, *et al.*, 2003:147). According to Brandt, *et al.* (2009:S74), US food labeling required that most processed packaged foods should have nutrition fact labels.

NLEA required food manufacturers to format their labels by including helpful information such as the ingredients and nutritional information which was to be in a rectangle box labeled 'nutrition fact' (Scott, 2008:1). According to the Federal Food, Drug and Cosmetic Act (FFDCA), labeling is a written, printed, or graphic theme on packaging materials and can be a simple tag attached to the product or an elaborately designed graphic as part of the packaging (Prathiraja and Ariyawardana, 2003:35). Wells, *et al.* (2007:679) asserted that, packaging preserve food products by protecting them and they act as the vital brand communicating vehicle to the consumer. Therefore, the label must be on the packaging or attached to it or visible through it (Cheftel, 2005:533).

The US Food Allergen Labeling and Consumer Protection Act (FALCPA) was effected in 2006 where major food allergens such as previously mentioned ones and flavourings, colourings, and incidental additives that may contain a major food allergen were required to be labeled clearly (Bren, 2010:1). Furthermore, the FDA mandated the amount of trans fats present in foods to be declared in the Nutrition Facts label without a percentage (%) Daily Value (Brandt, *et al.*,

2009:S75). In August 2006, the FALCPA proposed a regulation where the final regulation effected in August 2008 defining gluten-free for voluntary food labeling (Bren, 2010:3). Food labeling differs from one country to another in order for food labeling to meet consumers' needs and the situation becomes more intricate but there should be harmonization (Albert, 2010:2). Considering the array and intricacy of food labels there should be an indication that consumers read and understood food labels while manufacturers act upon improving them (Przyrembel, 2004:360).

2.1.3 The Canada, Australia and New Zealand food labeling

In October 2000, Canada announced that it would be implementing mandatory nutrition labeling for the manufacturers and effected in 2002 (Rumble, *et al.*, 2003:421). In 1991, the New Zealand National Heart Foundation introduced the Pick the Tick nutrition labeling programme which teamed up the food industry for a healthy food supply and improved nutrition labeling (Young and Swinburn, 2002:14). December 2002, Australian and New Zealand set out joint standards that introduced the percentage labeling, nutrition information requirements and labeling of allergens which replaced the pre-existing and out dated food regulations (Rumble, *et al.*, 2003:428). Therefore, in order to facilitate the proper usage of food labels, different food industries within different countries must have good food labeling practices according to their food labeling principles.

2.2 IMPORTANCE OF FOOD LABELS

Food labeling as communication vehicle to the consumers is of paramount importance for delivering messages about food quality and safety to consumers (Verbeke, 2005:359). The trend towards healthier eating and consumers wanting to make good and informed food choices are linked with the importance of food labeling (Coulson, 2000:662). Nonetheless, Coulson, (2000:662) asserted that, the relationship between the use of food labels by consumers and the patterns of dietary behaviour as well as food choice motivations was evident. In contrast, nutrition and health claims are likely to be the influential tools in consumer communication as they transmit information on food attributes and health-related food benefits unfamiliar to the consumer (Leathwood, *et al.*, 2007:474). Singla (2010:84) affirmed that, comprehensive food labels have become a vital tool. In addition, Leathwood, *et al.* (2007:474) revealed that, nutrition

and health claims influence consumer preference and inform them about food choices. Therefore, food labels are of vital importance when a product is selected and bought for the first time by a consumer (Singla, 2010:89).

During food purchasing, consumers want to make informed decisions regarding food attributes and safety (Peters-Texeira and Badrie, 2005:508). From a consumer science point of view consumer processing of product information has to be at the level of understanding (Leathwood, et al., 2007:474). In addition, Singla (2010:83) asserted that, food labels play an important role by disseminating imperative information to consumers and bridging the gap between the consumer and the product ingredients. According to Peters-Texeira and Badrie, (2005:511), food labels inform consumers, assist them to identify, promote and offer advice on the utilization of the product. Therefore, food labels serve as a primary communication medium between consumers and the food industry (Silayoi and Speece, 2007:1495) as well as sell the product to consumers and enable them to make comparable food choices (Peters-Texeira and Badrie, 2005:511 and Loureiro, et al., 2006:250).

In a previous study, Singla (2010:83) found that, in the past food labeling was limited to food name, quantity, price and identity of the manufacturer. In order to inform consumers, effective labeling of food products is essential, as a source of information (Cornelisse-Vermaat, et al., 2008:669). Furthermore, all food attributes such as the production and expiry date, nutritional facts, net-gross weight, preparation, cooking and storage conditions as well as the price of the product should be clearly labeled (Sanlier, and Karakus, 2010:141). Food labels should provide information about the food and its contents, the place or origin of manufacture and how to use and store the food (Rumble, et al., 2003:417). According to Cowburn and Stockley (2004:21), nutrition labeling is one example of food labeling that help consumers make favourable food choices by providing them with information about the nutrient content of food. Consumers use food labels as heuristics and cues that evaluate product quality for example, extrinsic quality cues such as brands or labels (Verbeke and Ward, 2006:454).

2.3 CURRENT FOOD LABELING LEGISLATION

2.3.1 The European Union

The European food rules comprise of only part of the revised and extended European food laws (Cheftel 2005:533). Many countries around the world have formulated food laws, guidelines and codes that regulate food labeling, and consequently the EU published its new food labeling legislation (Leathwood, *et al.,* 2007:474). New legislation should state the important aspects of label information to be easy to understand by consumers and placed in a noticeable position (Cheftel, 2005:533). According to Albert (2010:3), food label must comply with food laws and standards, in 1962 the Food and Agriculture Organization (FAO) together with the World Health Organization (WHO) established food labeling programme where Codex Alimentarius set its first food labeling standards which were recognized by the World Trade Organization (WTO).

According to Taylor and Wilkening (2008:439), food label information should be allowed enough space for easy reading. In addition, information presented to consumers must be reliable and trustworthy (Pieniak, *et al.,* 2007:1051) and the scientific evidence between food and health of consumers (Albert, 2010:3). The current European food laws, requires companies to make food claims on food products as trustworthy as possible and not misleading consumers (Leathwood, *et al.,* 2007:475). Therefore, information should not be obscured by any written or pictorial objects and may be written on the packaging material or attached to it or visible through it (Cheftel, 2005:533). According to EU food labeling, labels can either be mandatory or voluntary depending on the information to be presented (Przyrembel, 2004:360).

2.3.1.1 Mandatory labeling of foods

Different countries differ in their food labeling legislation but certain elements do not differ much from one country to another. Mandatory food labels refer to those compulsory and the labeling includes the list of ingredients, net quantity, and special conditions for keeping or use, the name of the manufacturer, packager, or a vendor established in the Community (Bureau and Valceschini, 2003:70). The WTO technical regulations regulate the mandatory labeling provisions such as product name, list of ingredients, weights and traceability information (Vidar, 2010:27). When a nutrition claim is made on the label with regard to energy value, protein,

carbohydrate, fat, fibre, sodium, vitamins and minerals the information becomes compulsory (Przyrembel, 2004:361) in EU countries. At the beginning, food labeling was limited to food name, quantity, price and identity of the manufacturer (Singla, 2010:83).

The US Code of Federal Regulations stated that, all ingredients are to be listed by their specific names (Rumble, *et al.,* 2003:424). Przyrembel (2004:361) stated that, ingredients shall be listed in descending order of weight but products consisting of a single ingredient such as fresh fruit, vegetables, carbonated water, single-base vinegars, cheese, butter, fermented milk and cream, are not mandatory. Similarly to the Codex requirements, the US food labeling guidelines and FDA required food manufacturers to declare peanuts, tree nuts, sesame seeds, milk, eggs, fish, crustaceans and shellfish, soy, wheat, and sulphites as allergens (Rumble, *et al.,* 2003:424). In 1969, Codex Alimentarius adopted food labeling of pre-packaged food General Standards to protect consumers health and ensure fair practices in international food trade (Randell, 2010:5) where food standards, guidelines, recommendations and codes of practice has been developed (Cheftel, 2005:533). Furthermore, in 1985 the General Standards were revised and since then they have been used as key instrument for the name of the product, special dietary uses and food additives (Randell, 2010:5-6).

According to Prathiraja and Ariyawardana (2003:36), the 1998 Food and Drug Administration (FDA), stated that a label should state the name of the product, net weight, nutrition facts panel, name and address of the manufacturer, and the brand name clearly. The nutrition facts panel on most food packages was to present information on the amount per serving of saturated fat, cholesterol, dietary fibre and expressed nutrient reference values as % Daily Values (Kozup, *et al.,* 2003:19). The NLEA required packaged products to bear the nutrition information in a new label format, regulates serving size, health claims and descriptor terms such as 'low fat' (Balasubramanian and Cole, 2002:112).

For calories, fat, saturated fat, trans fat, the sum of saturated and trans fat, cholesterol, sodium, carbohydrate, fibre, sugar, protein, vitamin A, vitamin C, calcium and iron nutrient declaration is mandatory (Rumble, *et al.,* 2003:421). The EU mandated the labeling of allergenic ingredients but the Canadian Food and Drug Regulations did not require the mandatory declaration of

allergenic substances in foods on food labels (Rumble, *et al.*, 2003:424). Therefore, it is the responsibility of the FDA to protect the US consumers by ensuring that products are safe, wholesome and properly labeled (Brandt, *et al.*, 2009:S74).

2.3.1.2 Voluntary labeling of foods

Food labels are becoming more complex, particularly as food products are becoming highly processed and value-added (Prathiraja and Ariyawardana, 2003:36). Apart from mandatory food laws, voluntary food labeling is the other set of the EU food laws. Where no claim is made, nutrition food labeling became voluntary and the listing of nutrition information is presently updated to prevent the use of unauthorised reference values for nutrients (Przyrembel, 2004:361). The author further stated that, the most important purpose for this regulation was to eradicate fraudulent practices and adulteration of foods. According to the Codex Alimentarius and the EU regulations, nutrition labeling is voluntary for all foods, except for packaged foods when a nutrition claim is made (Rumble, *et al.*, 2003:421). The voluntary food labeling can be ruled by non-binding instruments or by legally binding provisions as this will help to strengthen the legal security to the consumers and operators, for instance, the organic production ban the marketing of foods labeled as organic unless they meet specific conditions (Vidar, 2010:27).

2.3.2 South African food labeling regulations

In the past, South African food manufacturers used marketing strategies that misled consumers with food labels, for example, labeling vegetable oil with 'contain 0% cholesterol', when in fact vegetable oil does not contain cholesterol (Steenkamp, 2007:1). South Africa has passed the new regulations on food labeling in 01 March 2010, Government Notice Regulation 146 (GNR146) as part of the Foodstuffs, Cosmetics and Disinfectants Act. The new regulations are to address deception, inform and promote the health of the consumers. The legislation comprise of 54 regulations, six annexure which aid the interpretation of the regulations. However, for best interpretation of the regulations, other legislations such as Consumer Protection Act/Bill of 2008, Agriculture Product Standards Act (Act 119 of 1990, Reg. 258), the guidelines relating to the labeling and advertising of foodstuffs and the National Health Act (Act 61 of 2003, Reg. 918) are to be used as well.

The South African latest food labeling act is in line with the international Codex Alimentarius regulations and also includes new scientific developments with regard to positive healthy living (Schönfeldt and Gibson, 2009:571). The previous food labeling regulations (R2034 of 29 October 1993) were published under the Foodstuffs, Cosmetics and Disinfectants Act No.172 of 1972 (Department of Health, 2010:1) to get rid of the negative labeling of products and specifying only ingredients in the product (Parker, 2009:1). The new regulations were set to ensure that consumers have good access to healthier food and correctly labeled products (Department of Health, 2010:1). Therefore, food manufacturers and producers were given till 01 March 2011 to include all the new information on their labels and have to comply with the latest legislative requirements.

2.3.2.1 The new South African food labeling legislation (Gnr 146)

GENERAL PROVISIONS

The new South African food labeling legislation starts with definitions which are of vital importance to both the manufacturer and the consumer and they must read them thoroughly for better interpretation. Under the general provisions, GNR 146 covers general regulations 2 to 6 which stipulate clearly what manufacturers must do for correct food labeling with regard to pre-packaged and non-packaged or bulk stock products. The presentation of the labels requires the food manufacturers to label their products in English and where possible at least one other official language of South Africa can be used and the label must be clearly visible, legible and be permanently attached to the packaging material (GNR 146, 2010:15).

The letter sizes

During food labeling, the food industry must ensure that the font size of the letters must not be less than 4mm and must be in an area of $>12000mm^2$ (GNR 146, 2010:16). Furthermore, the lettering of returnable soft drink bottles must not be less than 1mm in height (GNR 146, 2010:16). The regulations 7 and 8 of GNR 146 compare with the provisions of Consumer Protection Bill, part F and G which stipulate that consumers have the right to fair and honest dealing, the right to fair, just and responsible terms and conditions respectively. Thus, if food

manufactures label their products accordingly, the rights of the consumers will be met since they will be able to read and use food labels without any difficulty.

Identification

The legislation emphasized that the product name has to appear on the main panel but if the name is not a proper description of the product, the name can be accompanied by a proper description and where Codex Alimentarius Standards has established a name or names, at least one of the names should be used (GNR 146, 2010:16-17). The manufacturer, importer or seller's contact details must also be labeled for easy identification.

The regulations require food manufacturers and producers to state instructions for use on the label in order to make the utilization of the food product simple (GNR 146, 2010:17). Where applicable the net contents of the container in the Systeme International units (SI-units) must be labeled. The Consumer Protection Bill, part H stipulates that, the consumer has the right to fair value, good quality and safety. This compares with regulation 9 of GNR 146 which requires food manufactures to name their products and state where necessary instructions for use and storage, as well as the listing of ingredients and the net content. Additionally, Chapter 4 of the Consumer Protection Bill state that the supplier must have identification by registering the business name.

Country of origin

Despite the identification of the manufacturer, the label must also reveal the country of origin even if the main ingredients, processing and labour to make the food are from a particular country, it must state 'product of ....', 'produced in ....', 'processed in ....', etc (GNR 146, 2010:17).

Batch identification

For traceability of the product and to follow the movement of a food item through specified stage(s) of production or processing and distribution, the batch number must be clearly labeled (GNR 146, 2010:17). Thus, if a product reaches the market and if found to be hazardous to the consumers, the batch number can be used to trace the product.

Date marking

Furthermore, 'best before', 'use by' or 'sell by' date must appear on labels according to different products and the date must be numerically written in order of 'Day-Month-Year' in order for consumers to have healthy products (GNR 146, 2010:17-18). Similarly, Codex General Standards of date marking also preferred 'Best before' form in order to provide information about the expected quality of the product which has to be accompanied by the appropriate storage instructions (Randell, 2010:8-9). Only the 'best before' can be abbreviated as 'BB' and where several products are included in a container, the date must appear on the packaging material that remains with the consumer (GNR 146, 2010:18). The Annexure 4 consists of a list of foodstuffs and ingredients that are exempted from a date of durability, for example alcoholic beverages, chewing gum, confectionary products consisting of flavoured and/or coloured sugars, ready-to-eat flour confectionary fresh fruits and vegetables, processed meat products, while honey is the only one that must have a date on which it was pre-packaged (GNR 146, 2010:48).

Prohibited statements

Regulation 13 of the GNR 146 comprise of certain labeling terms that are banned by the government such as 'health' or 'healthy', 'wholesome' or 'nutritious' even the endorsement of the manufacturers logo, mark, symbol, written or verbal statements with regard to nutrition or safety of the products since they mislead consumers unless approved by the Director General of Health (GNR 146, 2010:19). Labels indicating that certain substances are not in the product are not allowed, for instance, 'contain no hormones' since the statement may be true (Parker, 2009:1) but the label must state only what the product comprise of.

Negative claims

Similarly, descriptive words such as, 'X% fat free', nutritious, healthy, wholesome, are not supposed to appear on labels and 'sugar free', 'fat free' and 'diabetic friendly' can only be used if specific conditions are met for instance, low GI, lower fat, etc. (Steenkamp, 2007:3). Therefore, manufacturers who previously marketed their products as 'low-energy', 'energy-reduced' or 'energy-rich' must label their products according to the new regulations. With regard to the negative claims, no claim shall be made on the label unless approved by the Health practitioner, for example 'X% fat free' (GNR 146, 2010:19). Similarly, in 1991 Codex General

Standards prohibited claims, potentially misleading claims and conditional claims but adopted specific texts to provide further detailed interpretation such as 'organically produced' and 'Halaal', but special dietary claims and medical foods are of separate standards (Randell, 2010:9).

SPECIAL PROVISIONS

Ingredient labeling

The new South African food labeling regulations also highlighted the special provisions on labeling the ingredients where they must be labeled in a descending order with the heaviest mass or volume be listed first (GNR 2010:20). However, ingredients that might differ in content as a result of seasonal differences may not be listed in a descending order (GNR 2010:20). The ingredients naming must specify the name of the used ingredient in a foodstuff especially when independently sold as a foodstuff and the content of the complex ingredients used in microbiological culture must be indicated such as (milk, salt, rennet nature, etc) in cheese making (GNR 2010:21). Codex Alimentarius General Standards also stated that labeling of food additives must have been evaluated and approved for safety (Randell, 2010:8).

The Quantitative Ingredient Declaration (QUID)

The (QUID) of the product must be labeled with special emphasis on the presence of a specific ingredient in proximity to the words, illustration or graphic or directly after the name or after each relevant ingredient in the ingredient list (GNR, 2010:22). Raw processed meat products must indicate meat and water content as a percentage on the main panel and be in bold capital letters of at least 3mm in height (GNR, 2010:22). Similarly, added water during the manufacturing of the foodstuff must also be included in the ingredient list while the fats and oils must be defined by their classes, for example, vegetable or animal fat/oil (GNR 146, 2010:22).

Labeling of additives

The listing of food additives added during the manufacturing of the foodstuff must be labeled by using common names that are understandable to the consumer according to the list in Annexure 1 (GNR 2010:21) for example, acids, anticaking agents, colourants (except tartrazine),

chemically modified starches, emulsifiers, flavourings (except MSG and sodium chloride), herbs or mixed herbs and spices or mixed spices, raising agents, etc (GNR 2010:43). According to Regulation 8(3) and regulations published in terms of the Agricultural Products Standards Act, 1990 (Act No. 119 of 1990), on a product that contains a flavouring ingredient, the words 'flavouring' or 'flavoured' must accompany the name of the product (GNR 2010:24).

Labeling of allergens

Common allergens, flavourants, colourants, additives, preservatives and antioxidants must be clearly indicated in the list of ingredients by their common or chemical names, abbreviated and put in brackets after the compound ingredient in the ingredient list, for example monosodium glutamate (MSG) (GNR 146, 2010:25-6). Furthermore, common allergens and allergen cross contamination must be labeled but uncommon allergens must be disclosed on request of a consumer, for example, the inspector or the Department of Health. Allergen-related claims must be made only if the foodstuff does not contain the allergen nor has a natural allergen (GNR 146, 2010:25-6). Codex General Standards also require the declaration of allergens irrespective of them used as sub-ingredients of composite foods below the cut-off level of 5% or as genetic modified ingredient (Randell, 2010:13).

Vegetarian claims and irradiation labeling

The vegetarian claims must be categorized, for example lacto, ovo, etc. and products that are irradiated must be labeled, the international recognized food irradiation symbol as illustrated by the Codex General Standards can be used (GNR 146, 2010:27).

NUTRITIONAL INFORMATION

The nutritional information on food labels is mandatory especially when claims are made but the nutritional and health claims appearing on labels as voluntary, must have the 'Typical nutrition information' as the title, specifying the mass or volume of a single serving as per 100g/100ml (GNR 146, 2010:28) as indicated in figure 2 below. Similarly to the EU and US food laws, when information about the nutrient and energy value is indicated on the label and no claim is made, the nutritional information is voluntary (Przyrembel, 2004:361). Furthermore, the 2006 Codex Guidelines on Nutrition Labeling also describe that the nutrition labeling of food can be

voluntary when a nutrition claim is made but the nutrition labeling should be effective by providing the consumer with all the information (Randell, 2010:10).

Minimum nutritional requirements may be in a linear format and only claims permitted by the regulations may be used (GNR 146, 2010:28) as indicated in figure 2 below. According to the Codex Guidelines on Nutrition Labeling, energy value, protein, carbohydrates and fat content and the amount of any other nutrient for which a nutrition or health claim is made must be declared as well as types of fatty acids and cholesterol, types of carbohydrates and fibre, vitamins and minerals as well as a list of reference or daily intake values for certain nutrients (Randell, 2010:11). Although the new South African food labeling regulations stated that, the nutritional information must be presented in a table form indicating energy content in kilojoules (KJ) and the amount of a nutrient be declared in mass (GNR 146, 2010:28) per Annexure 2 in the South African new food labeling regulations R146 of 01 March 2010. Figure 2 present the South African nutritional information and on how it should be presented on food labels effecting 01 March, 2011:

TYPICAL NUTRITIONAL INFORMATION

	Per 100g/ml	Per single serving
Energy (KJ)	1507 KJ	452 KJ
Protein (g)	9g	3g
Glycaemic Carbohydrate (g) of which total	61g	5g
sugar (g)	18g	18g
Total Fat (g)	9g	5g
of which Saturated fat (g)	27g	3g
*	28g	0.8g
**	3.1g	0.9g
**	9g	0.9g
***	117g	3g
Dietary Fibre # (g)	108g	35g
Total Sodium (mg)	0.3mg	0.01mg
• Any other nutrient of food component to be declared in accordance with these Regulations. • In alphabetical order, in the order: vitamins, minerals, others.	Indicated in grams (g), milligrams (mg), micrograms (mcg/µg) or appropriate unit of measurement.	Indicated in grams (g), milligrams (mg), micrograms (mcg/µg) or appropriate unit of measurement.

Nutrient reference value (NRVs) for individuals 4 years and older (see annexure 3) expressed per single serving is optional.

Place the statements required by the regulation 50(4) as appropriate here.

* Place to insert trans fat

** Place for a subgroup nutrient, such as monounsaturated fat, polysaturated fat, omega-3 fatty acids et cetera

*** Place to insert cholesterol information is given

\# Indicate method of analysis used to determine dietary fibre (As packaged / ready-to-eat)

Figure 2: Minimum mandatory nutritional information declaration (GNR 2010:21)

During reviewing the current food labeling act which was passed in 01 March, 2010 and enforced in 01 March, 2011, the issue of health claims on products, serving sizes, the Glycaemic Index (GI) and the determining the list of products considered not to be healthy were deferred for review in phase two (Department of Health, 2010:2). Therefore, any label information that is not supposed to be in the new food labeling legislation is illegal if it will appear on food labels.

2.3.2.2 South African food label symbols/logos

In most cases when consumers purchase food, they actively look for the symbols on the food packages in order to have clear information about the product and to have a good purchasing decision (Rayner, *et al.*, 2001:27). This has proved that consumers are well informed especially when products are well labeled (Cornelisse-Vermaat, *et al.*, 2008:675) and they rate the product

healthier if symbols or logos are provided on the label (Grunert and Wills, 2007:393). The table in chapter one about the symbols/logos that are used in this study provided the information about them that the university student consumers can read to understand and use them during food purchasing so that they can make informed food choices. In this part of the chapter the images will not be provided but only the information on the meaning of each symbol/logo will be discussed according to different literature.

In 1987, South Africa launched the Heart Mark logo which was in 1992 used on 100 products with a heart bracketed by a knife and a fork within a circle (Graham, *et al.*, 1994:31). According to Ketterer (2010:1), "Heart Mark products are supposed to be tested and meet certain nutritional criteria as stipulated by the Heart and Stroke Foundation such as the product should be low in saturated fat, cholesterol, sugar and sodium and where relevant high in fibre".

The Glycemic Index (GI) symbol means that "the food are properly tested and are low in total fat, saturated fat, sodium and energy and be a good source of fibre" (Mitchell, 2008:245S). The GI logo/symbol is used in conjunction with the Diabetes South Africa logo on frequently used products that are ready-to-eat such as popcorn and breakfast cereals, thus providing an overall healthy food choice (Mitchell, 2008:245S). The Gylcemic Index is the blood glucose responses of carbohydrate products and products containing it must have a carbohydrate content of 40% or more, total fat content not exceeding 30% and total protein content not exceeding 42% of the total energy value respectively and they must bear a label of Low-GI Value of 0 to 55, Intermediate-GI value of 56 to 69 and High-GI value of 70 and more (Foodstuffs, Cosmetics and Disinfectants Amendment Act, 54 of 1972, No. R642, 2007:38). The Low-GI products indicate that "products may reduce the risk of diabetes, cardiovascular disease, metabolic syndrome, chronic inflammation and possibly some types of cancer" (Wolever, *et al.*, 2008:247S).

Consumers need adequate food labeling information in order to make healthy food choices in order to improve the quality of diet and lifestyle. South Africa has compiled food-based dietary guidelines such as encouraging the consumers to use fat sparingly (Wiles, *et al.*, 2009:69). Globally, consumers often check fat, kilojoules and sugar contents on food labels (Mitchell,

2008:244S). Ketterer (2010:1) affirmed that "saturated fat found in animal products such as full cream dairy products might cause cholesterol, thus, have to be used sparingly and therefore products should be labeled as low fat of 1.5g per 100g in solids or 0.75g per 100ml of liquids and 0.1 trans-fat combined per 100g". Furthermore, low in saturated fat help raises the bad LDL cholesterol in blood and has been linked to increased risk of coronary heart disease. It is recommended that people consume less than 10 percent of kilojoules from saturated fatty acids (Evans, 2008:1).

A product is considered healthier when exhibiting a health symbol compared to the one providing health indicators such as multiple traffic lights and Guideline Daily Amounts (GDA) (Grunert and Wills, 2007:393). The GDA shows the amount in grams and percentages for energy, sugar, fat, saturate fatty acids and salt per serving (Feunekes, *et al.*, 2008:58) that is, the amount of energy/nutrients recommended that an average person consumes in one day in a graphical form (Hawkes, 2010:48). Product symbols that bear 'Healthy Eating' words usually simplify information processing (Rayner, *et al.*, 2001:28).

Consumers prefer organic products over the inorganic ones. If a product bears a certified 100% organic symbol, it indicates that "it is produced entirely from organic raw materials treated with pesticides though it does not indicate whether or not the product has genetically modified food ingredients" (Holmes, 2007:2). Manufacturers must label their products with a well-recognized organic logo that indicate that the product is 100% organically produced (Hoogland, *et al.*, 2007:47).

In South Africa, organic products are certified by Afrisco/Ecocert, who annually inspects producers for certification (Vermeulen and Bienabe, 2007:11). The Ecocert label is a mark of recognition to place emphasis on superior quality and is one of the world leaders in the certification of organic farming products (Ecorcert Professionalism and Services, 2010:1). Pick 'n Pay sell organic products that have been certified while Woolworths has a distinctive organic logo since 1999 certified by Afrisco/Ecocert that it adheres to International Organic Standards (Vermeulen and Bienabe, 2007:11).

In verifying the originality and healthiness of the product, different manufacturers and producers have distinct ways of certifying their products which appear on food labels as symbols/logos. Halaal certification logo is a way the Islam certify to consumers that their products do not contain pork derived ingredients or alcohol, because according to their religious laws they cannot consume these products (Clover, 2010:1).

Furthermore, the Bfs/ucD Milchik certification is used on food labels to inform the Jewish consumers that there is no meat derived ingredients in the dairy products because their religious rules does not allow them to eat meat and dairy combined (Clover, 2010:1).

The rBST free logo indicates that the milk product is tested to be free of the rBST hormone, thus, the cows have not been given the hormone to increase their milk production. This hormone is considered harmful to humans (Clover, 2010:1).

Antioxidants are substances that are found from vitamins (A, C, E), minerals (copper, zinc, selenium) and vitamin-like substances such as ubiquinones and bioflavonoids to protect consumers from damage caused by free radicals which are produced in the human body as part of its normal metabolic processes and are needed to relieve stress and cure certain illnesses (Ketterer, 2010:1). The antioxidants can be obtained from products such as Rooibos tea which is grown in South Africa.

In South Africa, when products are produced and before they reach the consumers, they have to be valuated and this is done in a form of set standards. Products are valuated by the South African Bureau of Standards (SABS) and those that meet the standards bear the SABS approved logo which is a highly recognizable symbol of credibility and a powerful marketing tool. The logo reinforces a product's intrinsic features and the use of the SABS mark on a product, strengthens point-of-sale impact and gives it greater prestige in the market place. The product bearing the SABS mark conforms to a specific South African or International standard (The SABS Auditors, 2010:1). Different SABS symbols are used; depending on which part of the product carry the SABS approved.

Another symbol/logo that is seen on many South African food products is the allergy warning symbols. This symbol is seen on food labels of products that may contain milk, wheat and gluten or other substances assumed to be allergic to some consumers. Therefore, the product must be labeled with and allergic warning symbol (Lapid, 2008:1). The 'allergy advice' symbol highlight the allergic ingredients used in the product and the information may also declare possible allergenic cross-contaminants (Hattersley and Chan, 2010:64).

The Green Dot symbol is a trademark used to indicate that the packaging material used for the products is minimised and easier to recycle. It was originally developed in 1991 in Europe and the presence of it on packaging indicates that the manufacturer of the package has purchased a license for the right to use the 'green dot'. The symbol refers to the packaging itself, and not the items inside (Anderson, 2010:1).

With the symbol that indicates "suitable for vegetarian", this means that "the food does not contain any meat or animal-derived additives such as gelatine (a gelling agent derived from animal ligaments, skins, tendons, bones, etc.) but in the case of cheese, it means that animal-derived rennet has not been used to make it" (Food Standards Agency, 2004:1).

A product with a high in dietary fibre symbol means that "when the product is eaten with adequate fluid the food moves quickly and relatively easily through the digestive tract and helps it function properly and the product may also help reduce the risk of heart disease and diabetes" (Mayo Clinic staff, 2010:1). There is no recommendation for the right amount of fibre to consume, but the range is from 25g to 38g where a smaller woman can aim for the lower number and an active man for the higher (Lambert, 2006:1). The Mayo Clinic Staff (2010:1) stated that; women should try to eat at least 21 to 25 grams of fibre a day, while men should aim for 30 to 38 grams a day.

2.4 SOURCES OF LABELING INFORMATION
Due to the trend towards healthier eating, consumers demand accurate information about product attributes and food labels is considered to be the most appropriate source of information (Ali and Kapoor, 2009:725). However, Grunert and Wills (2007:386) asserted that, consumers seem to

understand certain information on food labels, but confusion increases with intricacy of the information, thus, interpretational aids may be used for better understanding of this information. According to Cheftel (2005:532), phones, websites, leaflets and community information centres serve as sources of food label information to the consumers. Similarly, other sources include among the list mass media, books, advertisements, education programmes and medical advice (Ali and Kapoor, 2009:725). The mass media, friends, personal physicians and relatives were the most used information sources although the family doctor, health professionals and mass media were preferred as vital sources of information (Pieniak, *et al.*, 2007:1050-1).

Mass media is considered as the most vital source of information with regard to food quality and safety whereas advertising is being viewed as the most extensively used source (Pieniak, *et al.*, 2007:1050 and Verbeke, 2005:357). Advertising aims at increasing the market for an individual product (Verbeke, 2005:357). Consumers tend to doubt product safety and may not understand or interpret label information accurately when food allergens are labeled (Cornelisse-Vermaat, *et al.*, 2008:670). Food labeling is considered to be the most appropriate and trusted source of information (Pieniak, *et al.*, 2007:1051) by which consumers can acquire knowledge about the food they consider buying at the point of purchase (Ali and Kapoor, 2009:725). Though labels may have very little space to write everything on it about the product they must be fully written (Cornelisse-Vermaat, *et al.*, 2008:675), symbols can provide these information if the consumer know the symbol and its meaning.

2.5 CONSUMER UNDERSTANDING AND USE OF FOOD LABELING

Despite the growth in reading of food labels, there will always be those who do not read. Literature proved that a lot of consumers claimed to often read food labels even though some just looked at them when purchasing unfamiliar food products (Cowbum and Stockley, 2005:23). Previous studies revealed that, earlier, food labels were limited only to product name, quantity, price and manufacturer's identity (Singla, 2010:83). The complexity of food label information and technical terms, numerical calculations and percentages are blamed as reasons for consumers not understanding food labels (Grunert and Wills, 2007:395). Therefore, detailed and well-informed food labels have to be used to disseminate vital information to consumers (Singla, 2010:84).

However, it is evident that consumers may not understand and use nutrition labels, even though they say that they do (Grunert and Wills, 2007:385). In a study by Cowburn and Stockley (2005:23), consumers revealed that they understand the terms 'fat', 'calories/kilocalories', 'sugar', 'vitamins' and 'salt' but less of them understand the relationship between calories and energy; sodium and salt; sugar and carbohydrate; cholesterol and fatty acids. Poor consumer comprehension of food labels has been cited as one of the primary barriers to food label use (Jay, et al., 2009:25). Additionally, consumers indicated that they have difficulty in understanding and interpreting the role nutrients play in their diet (Cowburn and Stockley, 2005:23).

In a study by Drichoutis, et al., (2006:3), the results revealed that female consumers use nutrition labels more than their male counterparts, the reason being that male consumers do not consider nutritional information as vital in making food choices. It is evident that there is a trend of more females reading food labels than males and perceiving them as a most useful source of information (Nayga, 2000:98). Males read ingredient lists only while females pay attention to information about calories, vitamins, and minerals as well as reading nutrition labels and ingredient lists (Drichoutis, et al., 2006:3). The reasons male consumers indicated for not reading nutrition labels is lack of time, size of print on packages, lack of understanding of terms and information not considered accurate to them (Cowburn and Stockley, 2005:24).

In contrary, female consumers read food labels for price and brand offerings but most consumers use labels only when comparing products (Singla, 2010:85). Cowburn and Stockley (2005:24) affirmed that, consumers with special needs related to diet and health, read food labels more, in these cases males read nutrition labels only. Food labels provides facts about nutrient claims on the front of the package for instance, 'low in fat, or 'high in fibre' (Garretson and Burton, 2000:214), which consumers usually use to make food choices. For consumers to understand information provided on food labels, they have to read and interpret it correctly (Cowburn and Stockley, 2005:22).

2.6 FOOD LABEL INFORMATION CONSUMERS USE
Due to trend towards healthy eating, consumers read food labels more critically unlike in the past where they would only read the ingredient list and the expiry date (Tawfik, 2010:1). The most

read information on labels is nutrition labels in order to provide information about the nutrient content of the food product (Cowburn and Stockley, 2005:23). Consumers demand detailed, accurate and accessible information on food safety and quality covering nutritional content, ingredients and health claims, production and expiry dates, storage and cooking instructions (Ali and Kapoor, 2009:725). At all levels of the food choice process consumers actively looked for the symbol/logo while gathering information about the product and in most cases, use symbols to evaluate the product and make their purchasing decision (Rayner, *et al.*, 2001:27). Consumers understand a well detailed food label more especially when symbols are supplied with sufficient information (Cornelisse-Vermaat, *et al.*, 2008:675). The simple symbols are the 'Green Keyhole', 'Pick the Tick' and 'Smart Spot' (Feunekes, *et al.*, 2008:58) used often in UK.

According to the results of a study conducted by Tawfik (2010:1), younger consumers read food labels that would help them lose weight especially on products claiming to be low in carbohydrates or low in fat. In addition, consumers revealed that they only read food labels when buying new food products but read nutritional labeling at home which they claim to understand and utilize it for food purchasing decisions (Tawfik, 2010:1). Due to complication of food labels, consumers look for information on calories or fat, but may ignore the overall function of other nutrients (Scheidt and Daniel, 2004:35).

At times, consumers make wrong conclusions about the product by using fat as a single nutrient to compare products relating to health forgetting that, products low in fat could be high in other nutrients, such as sugar or salt (Feunekes, *et al.*, 2008:58). Therefore, nutrition knowledge may facilitate label use by increasing its perceived benefits and efficiency (Verbeke and Ward, 2006:101). The terminology and small font size made the reading and understanding of food labels also complicated (Singla, 2010:90). However, consumers seemed to understand certain key terms and apply the information in simple tasks, but confusion increases with complexity of the information and the task they perform (Grunert and Wills, 2007:386). Therefore, simple and easy to understand language should be used and information being reliable (Singla, 2010:90).

Consumers make better food choices only if they understand and use the food labels (Verbeke and Ward, 2006:94). During food purchasing, consumer forms product quality expectations and

then quality experience (Scheidt and Daniel, 2004:275). Despite the use of food labels, controversial issues about biotech food labeling have been strengthened, for instance, if the labeling could mislead consumers (Peters-Texeira and Badrie, 2005:508). The picture on the label sometimes gives an idea of the colour, form and shape of the product (Singla, 2010:84). The intention of food labels are to inform and assist the consumers to identify, promote and offer advice on the use of the product (Pieniak, *et al*, 2007:1051). However, consumers might not be using food labels appropriately even though they say they do due to misunderstanding of the label (Grunert and Wills, 2007:385).

2.7 CONCLUSION

The chapter began with an examination of issues surrounding the history of food and nutrition labeling with regard to EU countries, US, Canada, Australia and New Zealand as well as the importance of food labels. This chapter further described the current food labeling legislation both mandatory and voluntary for EU countries and South Africa. Attention was paid to the new South African food labeling regulations (GNR 146) since this study is based on it to inform the consumers on the new food label information that the food industry should have provided on food labels to inform the consumers by 01 March, 2011. Furthermore, the South African food label symbols/logos were discussed specifically on what information they provide to the consumers and what they really mean. Sources of labeling information were also discussed in this chapter.

The literature shows that even though consumers use a variety of food label information such as media, parents, doctors and others, they still cannot understand some information provided on food labels especially that of nutrition information. The chapter further examined the consumer understanding and use of food labeling and food label information consumer's use. The literature revealed that consumers are aware of food labels but they never read them extensively to understand and interpret them accurately to use them influence their food purchasing decisions even though they are those consumers who claimed to understand and use food labels.

The following chapter will give a description of all aspects of the methodology applied in this study.

CHAPTER 3 – METHODOLOGY

3.0 INTRODUCTION

This study followed a social quantitative research approach. De Vos (2005:41) said that, this social science research is systematically controlled and critically investigate a social phenomenon which is guided by theory and hypotheses about a particular situation. This chapter describes positivism paradigm type of research applied and the methods used to gather and analyze data for this research. A positivism paradigm is a natural type of approach where facts are collected from the study population as scientific knowledge (De Vos, *et al.*, 2005:5-6). Furthermore, scientific theories are used and hypotheses are formulated from them to be validated through empirical research (De Vos, *et al.*, 2005:6).

With the intention of obtaining a large amount of highly structured data, a quantitative research method was suitable for the study where an exploratory survey was conducted. In exploratory survey research, careful consideration of available art of knowledge enabled this study to be comprehensively conducted though it may pose several problems in conducting this study due to lack of previous literature (Karlsson, 2008:101). However, for the consistency and control of this study, objectivity and replicability was achieved for implementation by other researchers, which are easier to accomplish with quantitative rather than qualitative research methods (Blaikie, 2000:243,246). Therefore, careful framing and positioning of the study was considered in order to pave way for future research (Karlsson, 2008:101). In order to elaborate on the reasons why these methods were chosen for the research, the following sections are included: an overview of the research strategy, study population and location, sample selection process, procedures for collecting data and data analysis, ethical considerations, reliability and validity of the study and statistics used in this study.

3.1 RESEARCH STRATEGY

The purpose of this study was to determine the interpretation and use of food labels as well as evaluation of some South African food labels by a sample of students at the University of the Free State. Research about the type of information consumers look for on labels and how they

use food labels is lacking (Pieniak, *et al*, 2007:1051). No scientific research on student consumers' interpretation and use of food labels as well as evaluation of the South African food labels has been done in South Africa since the introduction of the new food labeling regulations. Food labels sell a product as well as conveying information about it (Blanchfield, 2000:13) to the consumers. Many consumers have a poor understanding of food label terminologies and they may also not relate them well with product contents (Thomas and Bishop, 2007:236). It is of vital importance for the manufacturers to communicate their products distinctively and attractively to the consumers by means of understandable and usable food labels (Blanchfield, 2000:13). Previous literature is of vital importance to be used deductively as a framework for the current study to test a theory (Creswell, 2003:32) and generalize the results (Thomas, 2003:2).

A quantitative research strategy was used in this study in order to attain a large amount of information about consumers' interpretation and use of food labels. In quantitative research, emphasis is on experimentation on a large sample for objectivity and verification of collected data and statistical analysis (Goldenberg and Goldenberg, 2007:406). However, a survey design was used in this study as non-experimental approach (Creswell, 2003:13). This is because; questionnaires were used as method of data collection where respondents were selected (Fouche and De Vos, 2005:137) to generalize the results from a sample to a population (Creswell, 2003:14) of the university student in Bloemfontein. The information gathered about the current status on consumers' interpretation and using of food labels as well as evaluation of the South African food labels was then be reported in a quantitative form (Thomas, 2003:41).

3.2 STUDY POPULATION AND LOCATION

In the current study, the study population was student respondents from the University of the Free State in Bloemfontein (South Africa). The respondents were selected based on the presumption that they are at tertiary level of education and they should be reading and using food labels. The assumption was that university students are more concerned with healthy eating lifestyles which may influence the evaluation and use of general food labels during purchasing. However, if the study population does not read food labels and/or they could not answer the questions related to label interpretation and use it showed that they are not interested or not well

informed. Male and female respondents aged 18 years and older and not excluding any language or race were selected in this study.

A sample of 500 respondents was selected from the study population living in the university residences to include a wide range of the study population (Strydom, 2005b:195) from the University of the Free State. However, due to practical implications with regard to the willingness of respondents to participate, a total of 152 questionnaires were fully completed.

3.3 SAMPLING METHOD

The recruitment of the respondents was done in students residences where they were readily available. The accommodation department was approached to seek permission to use the students for data collection and five hundred questionnaires were distributed equally between five male and five female residences respectively on the Bloemfontein campus of the University of the Free State. A sample of 500 was used in this survey in order to generalize the results and for representativeness. For the accuracy of the results, the sample has to be large (Burton, 2000b:319). The larger sample size was used to incorporate a wider array of the study population, to draw more representative and accurate conclusions (Strydom, 2005b:195).

A non-probability sampling method was used to recruit respondents, by means of purposive sampling. Non-probability sampling was ideal for the current study considering that the population size could not be adequately determined (Blaikie, 2000:203 and Strydom, 2005b:201). Other than in probability sampling, non-probability sampling reduces the likelihood of knowingly selecting particular respondents (Strydom, 2005b:198). Thus, a non-probability sampling method was ideal for the current study, as the researcher could not ensure consumers' willingness to participate using a sampling frame. By using purposive sampling the respondents were selected for a specific purpose (Schutt, 2006:155), namely to evaluate the students' interpretation and use of food labels.

3.4 DATA COLLECTION

Data were collected by means of self-administered questionnaires over a period of a week. The use of questionnaires as a data collection method was suitable for this study to collect a large

amount of relatively simple data (Thomas, 2003:69 and Gratton and Jones, 2004:138). Furthermore, the benefits provided by questionnaires included anonymity of respondents, structured data (Gratton and Jones, 2004:138), and versatility which enabled researchers to successfully administer the questionnaires to a variety of respondents in different places (Domyei, 2002:9), that is, both male and female students in their residences.

3.4.1 Questionnaires

A questionnaire is a document containing questions seeking appropriate information to be analysed (Babbie, 2009:256) after data collection. Domyei (2002:6) defined a questionnaire as any written instrument given to respondents with sequence of questions or statements for them to either write out their answers or choose from the given answers. According to Babbie and Mouton (2003:233), a questionnaire must have a series of questions where many statements could be revealed as questions. Questionnaires are used mostly in survey research (Babbie, 2009:256) as one choice of obtaining information from the study population through asking questions relevant to the study. Different forms of questions are used in a questionnaire, namely factual which find out about respondents' demographic characteristics and attitudinal which are concerned with attitudes, opinions, beliefs, interests and values of respondents (Domyei, 2002:8) and in the case of this study the interpretation of a given symbol.

Questions are classified into open-ended and closed questions. Open-ended questions requires respondents to think and write answers in their own words and are only occasionally used in questionnaires because they are more difficult to code and analyze (Gillham, 2000:5 and Schiffman and Kanuk, 2007:30). In closed questions possible answers are predetermined (Gillham, 2000:5) and the respondent merely checks the appropriate answer from a list of options and questions, limited to the alternative responses provided thus relatively simple to tabulate and analyze (Schiffman and Kanuk, 2007:30). Open-ended and closed questions were used in this study. For this study, a self-administered questionnaire was used to collect meaningful data. A self-administered questionnaire is a cheap method of data collection where the researcher has little control over the completion of the survey (May, 1998:89).

3.4.1.1 Points to consider when constructing questionnaires

When designing a questionnaire, objectives must be clearly stated; determining the sampling population and writing the questionnaire to administer it while the results will be interpreted after data collection. Whether questions are open or closed, there are several points to consider when constructing questionnaires:

- **Clarity** – Questions must be clear, concise and unambiguous in order to reduce the chance of the question meaning different things to respondents (Schwarz and Oyserman, 2001:130) and should be answered without the respondents struggling with the answers (Synodinos, 2003 :227).

- **Leading Questions** – Questions should ask information that respondents can access readily (Synodinos, 2003:226) and address the objectives of the study (Delport, 2005:171). A leading question implies a certain type of answer and in closed format question, answers must be supplied that not only cover the whole range of responses but that are also equally distributed throughout the range for example the yes/no question.

- **Hypothetical Questions** – This questions forces the respondents to give thought to something they may have never considered. Therefore, a 'don't know' category in rating scales must be included to give respondents who do not have an answer a chance to make this choice (Muijs, 2004:50). Questions that ask respondents to predict their response to a future or hypothetical situation should be done cautiously particularly when respondents are likely to have limited experience on which to base their answers (Synodinos, 2003:227). Additionally, double negative question should be avoided as they lead to confusion among respondents who have to complete extra cognitive action to interpret the question (Muijs, 2004:50).

- **Bias questions** – A biased question is one that influences people to respond in a manner that does not accurately reflect their position in the investigation. Respondents must be willing to answer the questionnaire and questions must be relevant to the research and unbiased (Babbie, 2009:259).

The questionnaire must be brief and demographic characteristics should be at the end, because if respondents are annoyed at the start, they are unlikely to complete the questionnaire (Muijs, 2004:50). Questionnaires provide respondents with the opportunity to consider their responses,

by searching for responses and completing it at a time convenient to them (Burton, 2000a:328). In this study, a questionnaire was used to gather data from the respondents. Meaningful information was collected by means of self-administered questionnaires. Respondents were allowed a period of a week to give them freedom to complete it at a convenient time. The respondents completed the questionnaire themselves since it was easy to use and not time consuming (Burton, 2000a:328). The questionnaire was self-explanatory as self-administered questionnaires should be.

3.4.2 The questionnaire for the food label research project

A sixty-seven item questionnaire was designed, divided into two sections and took approximately 20-30 minutes to complete. Refer to Appendix 2 for the questionnaire. The first section contained questions about the consumers' interpretation and use of food labels in South Africa while the second section contained socio-demographic characteristics questions. All the questions were tabulated and coded with nominal scales, 5 point likert scales or multiple choice options for easy administering and analysis. The 5 point likert scales was used in this study to comprehend scale structure and to avoid violating assumptions in multivariate analysis unlike with ten-point likert scales which have no midpoints though the 5 point likert scales could lead to a restricted set of scores making it difficult to measure differences or changes overtime (Azzara, 2010:100).

The first section of the questionnaire was divided into two questions. The first question had four sub questions and question (1.a) had nine questions to find out how respondents understand and use food labels, question (1.b) wanted to find out what information respondents get from the 10 given food label symbols. Question (1.c) wanted to find out how important the respondents consider the six given food label symbols while question (1.d) was to find out if respondents understand and use the given food label symbol.

In the second question of the first section, three questions were given and question (2.a) wanted the respondents to indicate how important they consider the 12 given attributes of food labels. In question (2.b) the researcher wanted the respondents to indicate which food label information they require and expect on the six listed food products. These food products are the most commonly eaten by the university students since they are more convenient to them during

preparation and use. The last question (2.c) was for the respondents to indicate which from the list of 14 sources of food label information do they use as a source of information. The assumption is that the university students are at tertiary level of education some they have exposure and access to those sources of information. Lastly, in the socio-demographic characteristics section, respondents were asked to specify age within a range and select gender, home language, level of studies at the university and whom they share the home with from the options provided.

Both open-ended and closed questions were included in the questionnaire to determine consumers' interpretation and use of food labels. A simple code system allowed the researcher to interpret these results. The coding was done in a range of 1-3 for question (1.b), where questions that were not answered or respondents did not know were coded 1, questions answered but not correct were coded 2 while the correctly or partly correct answers were coded 3. Since question (1.c) also required the respondents to leave the question if they do not know the answer, code 6 was also included in the coding range for easy analysis.

3.4.3 Template designed for evaluating some South African foods for correct labeling

In another part of the study, a template was designed to evaluate 35 different South African food items of five different categories according to the new South African food labeling regulations for correct labeling. The template was designed with columns where the vertical one was for the product name among the five categories and the horizontal one was for the food label attribute that the new South African food labeling regulations stipulated the food industry should avail on a food label. Where the product has the attribute, a tick ($\sqrt{}$) was made and where an attribute was not there a cross (x) was also made. Refer to Appendix 3 for product evaluation template. A sample of 50 food items was made where a sample frame with all the names of the products was written and assigned numbers. Different products were selected randomly from the cereals, dairy, meats and fish, fruits and vegetables and 'other' categories and they were coded for easy tabulation and analysis. According to Brody and Lord (2000:287), numbers are assigned to products for representation and easy tabulation. The random selection of the products was done with the attempt to have a representative sample of food items from the different categories as

was done before by Borgmeire and Westenhoefer (2009:184) where a sample frame was designed. Collected data was then analysed manual with some descriptions made to interpret the results.

3.5 PILOT STUDY

A pilot study was conducted to serve as a guide to help formulate the relevant and most applicable questions in order to achieve the objectives of the study. The participants of the pilot study were students in the Department of Consumer Science at the University of the Free State in Bloemfontein. By means of the pilot study, the results were used to establish the completion time of the questionnaire and which questions caused confusion to the respondents. Questions causing confusion were changed for better understanding by the respondents.

3.6 DATA ANALYSIS

Collected data was analysed using Statistical Package for Social Sciences (SPSS) software, version 17.0 for windows. The open-ended questions were analysed by means of content analysis where pre-coding was done in order to analyse and organise the questions within the ambit of the study. Cross tabulation was done for gender with all the questions except for question 1.b and a Pearson Chi-square test was used to determine the level of significance. The bar charts and pie charts were used for graphical representation.

3.7 ETHICAL CONSIDERATIONS

The researcher is obliged to recognize that the respondents have the right to agree or disagree to participate in this research (Kent, 2000:63). The objective of the study was communicated well to the respondents before they participated in this study. According to Strydom (2005a:59), respondents must fully understand the objective of the study for them to volunteer to participate in the study and to be aware that they can withdraw from the study at any time. Considering that this study is valuable to the consumers at large and participation should be voluntarily, the researcher superseded any respondent who were reluctant to participate as advised by Kent (2000:63). Permission was requested first from the respondents and they were made aware that the selection was based on their willingness to participate. Respondents were treated fairly and not put in any harm (Kent, 2000:63-64) and be assured of anonymity in the covering letter

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(Strydom, 2005a:61). The covering letter (Appendix 1) was attached to the questionnaire giving the details about the research and researcher. The purpose of the covering letter was to create a trusting relationship with respondents, guaranteeing authenticity, credibility, confidentiality and privacy (Andrews, *et al.*, 2003:196). The ethics were only attended to on a general level due to that the university did not provide the ethical consent to this study.

3.8 RELIABILITY

According to Silverman (2000:189), for reliability to be calculated, it is necessary for the researcher to document his or her procedures and to demonstrate that categories been used consistently. Thus reliability is basically concerned not with what is being measured but with how well it is being measured (Delport, 2005:163). In this study, the researcher achieved reliability through questions formulated and adapted to ensure that the objectives would be attainable. Five hundred questionnaires were handed out to students in the university residences in order to get adequate responses to draw reliable conclusions.

3.9 VALIDITY

Validity refers to what a test measures and for whom it is appropriate (Picciano, 2004:131). Silverman (2000:175) refers to validity as another word for truth. The author stated that sometimes one doubts the validity of an explanation because the researcher has clearly made no attempt to deal with contrary cases. Delport (2005:161) refers to validity as a degree to which the measurement measures the intended variable. Therefore, validity is concerned with the accuracy of findings (Thyer, 2009:362). Validity tests can be done by comparing the results of the test with a similar measure that has already established its validity (Picciano, 2004:27). In this study, the results were based on significant investigation and this was achieved through the following two methods to ensure validity:

3.9.1 Face validity

Face validity is when the measure has validity and when a test is related to the perceived purpose of the test (Kalpan and Saccuzzo, 2005:135). Hayes (2000:103) indicated that face validity basically judge to judges that a measurement is valid because it appears to be so, or it seems likely that it will be. In this study the researcher used face validity by consulting food and

research professionals, to evaluate whether the questions are related to the identified objectives. According to Delport (2005:161), this will indicate whether the questionnaire will accurately measure the concepts it is supposed to measure.

3.9.2 Content validity

Content validity, is where professionals review questions and prove to their correctness (Picciano, 2004:132). The validity of a measure is related to the capability of representation adequacy of the content the test is designed to measure (Kalpan and Saccuzzo, 2005:135). Delport (2005:161) pointed out that, there are two determining questions which will indicate that content validity is obtained: Is the instrument really measuring the concept? Does the instrument provide an adequate sample of items that represent that concept? In this study content validity was obtained by the relation of data to the objectives and how they related to the content of the literature review. The questionnaire was presented to the experts in the field of statistics and research to evaluate both content and face validity.

3.10   STATISTICS

During data collection, 500 questionnaires were distributed to the respondents, only 152 were received back and these were the only ones which were statistically analysed. Collected data was analysed using Statistical Package for Social Sciences (SPSS) software, version 17.0 for windows. Cross tabulations were done to analyse gender with all the questions except for question 1.b. Chi-square tests were done and Pearson Chi-square reported to establish significance. The significance was between the male and female respondents. Any value that was more than (P>0.05) was regarded as not significant and anything less than (P<0.05) was regarded significant.

CHAPTER 4 – RESULTS AND DISCUSSION

4.0 INTRODUCTION

This chapter presents the findings of this study. The focus of the study was on determining if university students' consumers can interpret and use food label information correctly as well as evaluating a sample of some food products in South Africa if they are labeled according to the new South African food labeling regulations. The respondents were given 500 questionnaires and only 152 were handed back answered. The uncompleted questionnaires were not used in this study hence the reason for the low response rate. The students seemed not willing to participate in the study claiming that they are busy, some claimed to have misplaced the questionnaires while other showed lack of interest to the research topic.

Presentation of results will concentrate on the comparison between the male and female respondent's interpretation and use of food labels. Furthermore, the use of food labels, understanding of food label symbols/logos, and the importance of food label attributes and the use of common food label information will be presented in this chapter. The chapter will further explore the sources of food label information consumer's use. Finally the results on evaluating a sample of food products in South Africa for correct labeling according the new South African food labeling regulations under review will be presented.

4.1 DESCRIPTION OF THE RESPONDENTS

The aim of this study was to determine if students as consumers interpret and use food label information correctly as well as evaluating a sample of some food products in South Africa if they are labeled according to the new South African food labeling regulations. The Socio-demographic characteristic of 152 respondents from the student residences is presented in Table 1.

Table 1: Socio-demographic characteristics of the sample population (n=152)

DEMOGRAPHIC CHARACTERISTICS	FREQUENCY	VALID PERCENTAGE (%)
AGE		
19yrs and younger	58	38.7
20-29	90	60.0
30yrs and older	2	1.3
GENDER		
Male	81	54.0
Female	69	46.0
HOME LANGUAGE		
Afrikaans	50	34.0
English	25	17.0
Sotho	29	19.7
Tswana	14	9.5
Zulu	10	6.8
Others	19	12.9
LEVEL OF YOUR STUDIES AT THE UNIVERSITY		
Undergraduate	134	89.9
Postgraduate	13	8.7
Others	2	1.3
HOUSEHOLD STATUS (share home with)		
No-one	8	5.3
Spouse/partner	15	10.0
Family members	91	60.7
Others	36	24.0

An equal number of questionnaires were distributed to five male and five female residences on the campus of the University of the Free State. Slightly more male respondents (54%) than female respondents (46%) completed and returned the questionnaires as shown in figure 3 below.
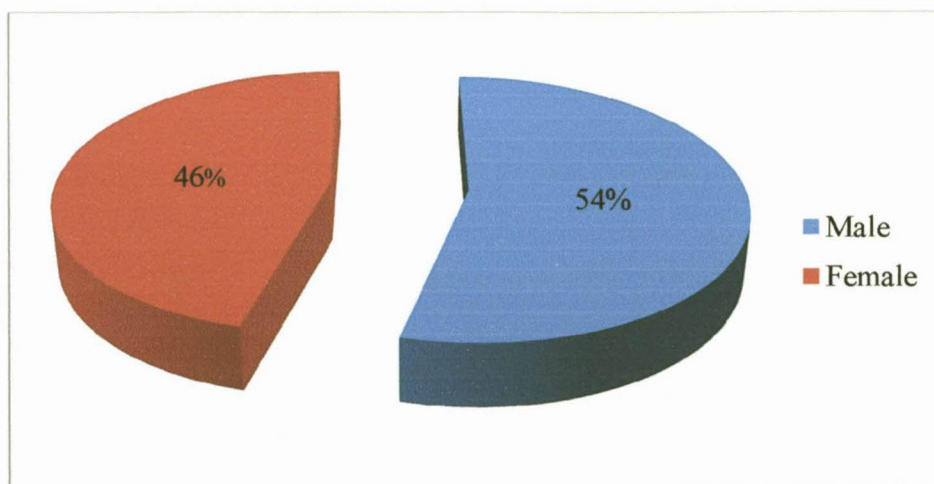
Figure 3: Distribution of the sample population by gender (n=152)

It is clear from Figure 3 that majority of respondents were males (54%) who participated in the study while only (46%) female also participated. It is surprising that more male respondents participated in this study than females and this could be assumed that more male respondents do read food labels than their female counterparts and/or purchase household food. Apparently, the results of this study do not concur with that of Nayga (2000:105) that stipulated that past studies consistently indicated that male consumers are less likely to use food labels.

4.2 THE USE OF FOOD LABELS

Question A1.a.1 asked the respondent whether he/she purchase the household food.

Table 2: Respondents' distribution on purchasing of household food (n=144)

Response/Gender	Yes (%)	No (%)	Total (%)
Male	76.6	23.4	**100**
Female	80.6	19.4	**100**
Total	**78.5**	**21.5**	**100**

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.335[a]	1	.563		
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 14.42.					

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P 2020 7189
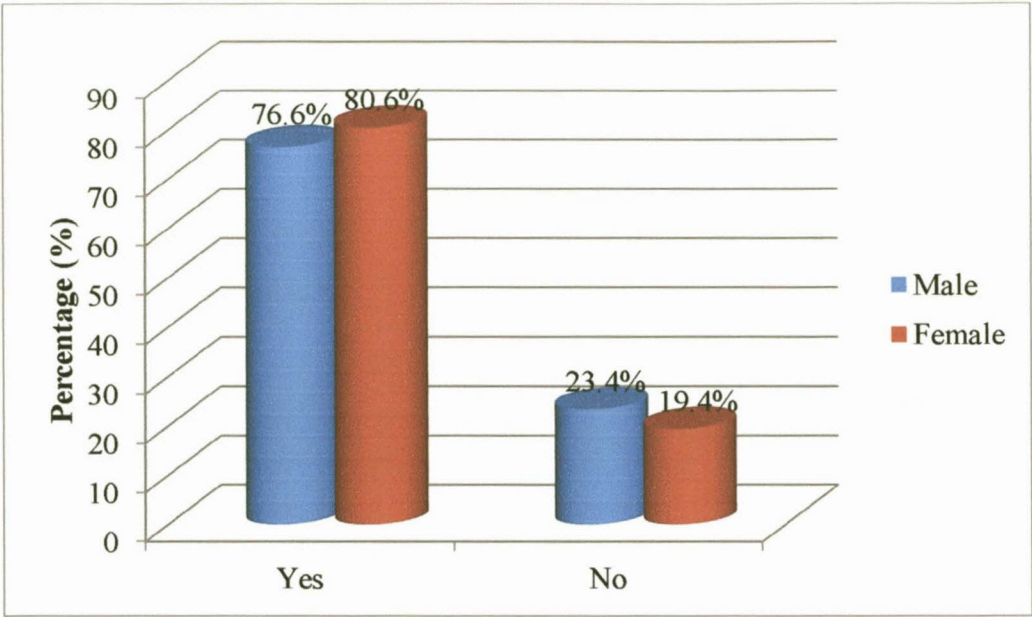
Figure 4: Respondents' level of purchasing of household food (n=144)

The results revealed that most of respondents (78.5%) do purchase their food. More female respondents (80.6% of the sample), do food purchases than male respondents (76.6% of the sample). It is not surprising because the assumption is that female consumers do food purchasing, but the situation differ from a normal household as all students in a residence do food purchases as individuals and not for families. The respondents indicating that they do not purchase food most probably select all their meals from the cafeteria. As indicated by (p=0.563), there is no significant difference in the purchasing of household food between male and female respondents.

Question A1.a.2 asked the respondent whether he/she read food labels.

Table 3: Respondents' distribution on reading food labels (n=147)

Response/Gender	Yes (%)	No (%)	Total (%)
Male	60.8	39.2	100
Female	50.0	50.0	100
Total	55.8	44.2	100

Chi-Square Tests

		Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Square	Chi-	1.715^a	1	.190		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 30.07.
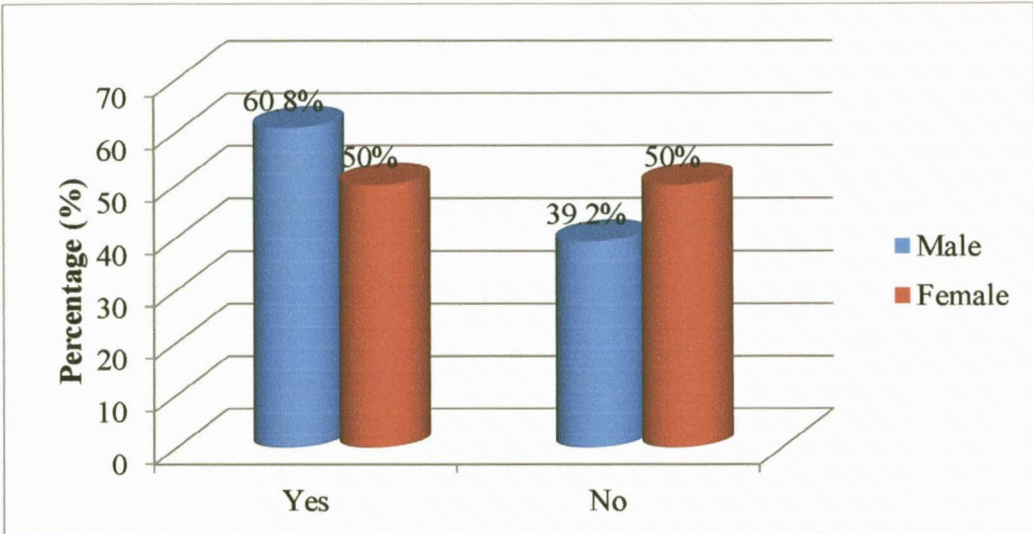
Figure 5: Respondents' level of reading food labels (n=147)

The results shown in figure 5 indicated that (55.8%) of the respondents read food labels while (44.2%) do not read food labels. The results also revealed that, (60.8%) of the male respondents read food labels while (39.2%) do not read food labels. Furthermore, (50%) of the female respondents indicated that they do and do not read the food labels respectively. The results prove that more male consumers read food labels as compared to the female ones and there is no significant difference between male and female respondents as indicated by (p=0.190). Where a larger number of male respondents reading food labels (60.8%), contradict with those of Jay, *et al.* (2009:29), in a study carried among the Northern American university students that indicated that 71% of male students did not used food labels when they purchase food products. This is because males perceive nutrition information as less important during food purchasing than females who are concerned with reducing health risks (Nayga, 2000:98). Apparently, the results of this study refute that of Nayga (2000:105) that stipulated that past studies consistently indicated that male consumers are less likely to use food labels.

Question A1.a.3 asked the respondents whether they prepare their own food.

Table 4: Respondents' distribution on preparing own food (n=148)

Response/Gender	Yes (%)	No (%)	Total (%)
Male	92.5	7.5	**100**
Female	91.2	8.8	**100**
Total	**91.9**	**8.1**	**100**

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.086ª	1	.769		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.51.
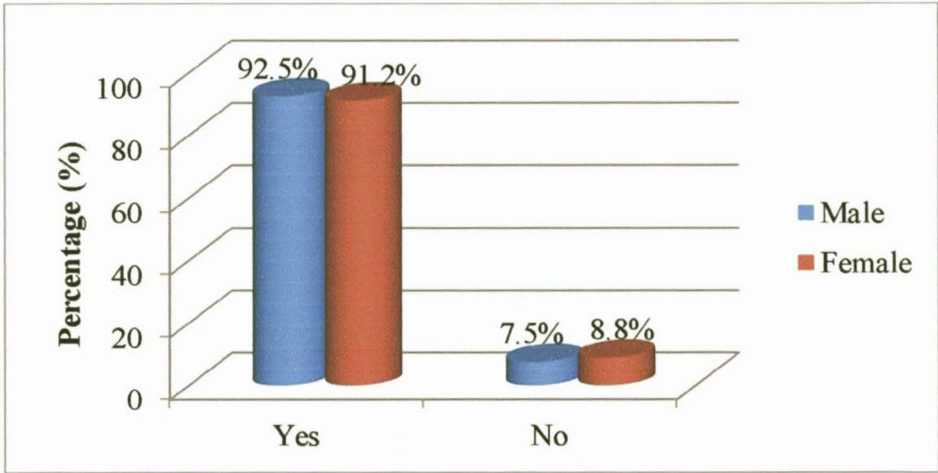
Figure 6: The percentage male and female students preparing their own food (n=148)

The results indicated that 91.9% of the respondents prepare their own food and 8.1% do not prepare their own food. 92.5% of the male respondents and 91.2% of the female respondents prepare their own food. The residences do have cafeteria facilities where the students can purchase prepared food but these results indicate that the majority of students prepare their own food. The results of this study showed no significant difference (p>0.05) between the male and female students preparing their own food.

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Question A1.a.4 asked the respondents whether they refer to food labels when they purchase a product for the first time.

Table 5: Respondents' distribution on referring to food labels when purchasing product for the first time (n=147)

Response/Gender	Yes (%)	No (%)	Total (%)
Male	62.5	37.5	**100**
Female	53.7	46.3	**100**
Total	**58.5**	**41.5**	**100**

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.155[a]	1	.283		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 27.80.
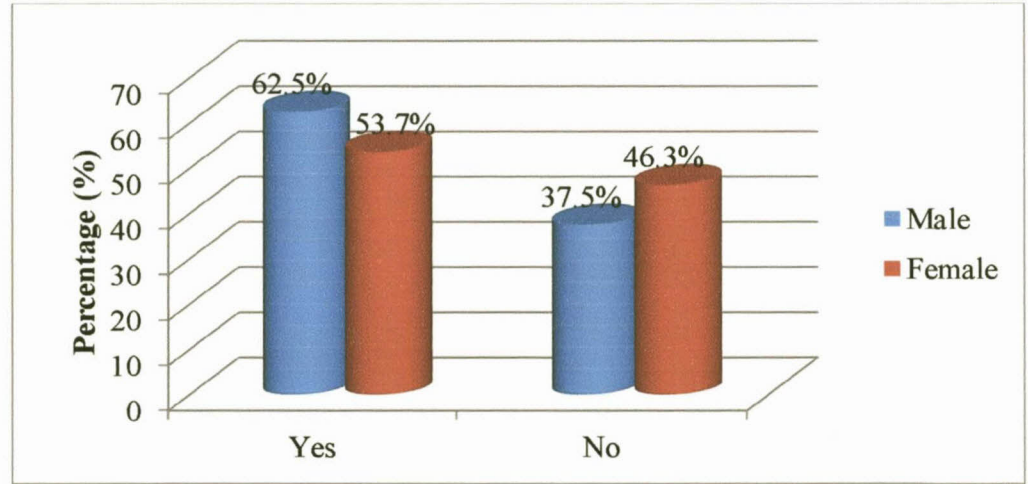
Figure 7: Respondents' level of referring to food labels when purchasing a product for the first time (n=147)

The results indicated that 58.5% of the respondents read the food label of a product before they purchase it for the first time, while 41.5% do not. A larger percentage 62.5% of male than female 53.7% respondents indicated that they read food labels before they purchase a food product for the first time. Underwood, *et al.* (2001:408) stated that, consumers evaluate a product that is unfamiliar to them by comparing it with other brands that they are familiar to, the first step of such an evaluation would be to read the food labels. Other researchers, (Cowburn and Stockley,

2004:24) also stated that, consumers claim to read labels of food products that they are unfamiliar with in order to influence their product purchasing. One can speculate that female respondents might consider themselves more informed on the content of food products and that can explain their behaviour in this respect. The results of this study do not show any significant difference (p>0.05) between the male and female referring to food labels when purchasing product for the first time.

Question A1.a.5 asked the respondents whether they refer to food labels for every kind of food product.

Table 6: Respondents' distribution on referring to food labels for every kind of product (n=147)

Response/Gender	Yes (%)	No (%)	Total (%)
Male	31.6	68.4	**100**
Female	14.7	85.3	**100**
Total	**23.8**	**76.2**	**100**

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.781[a]	1	.016		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 16.19.
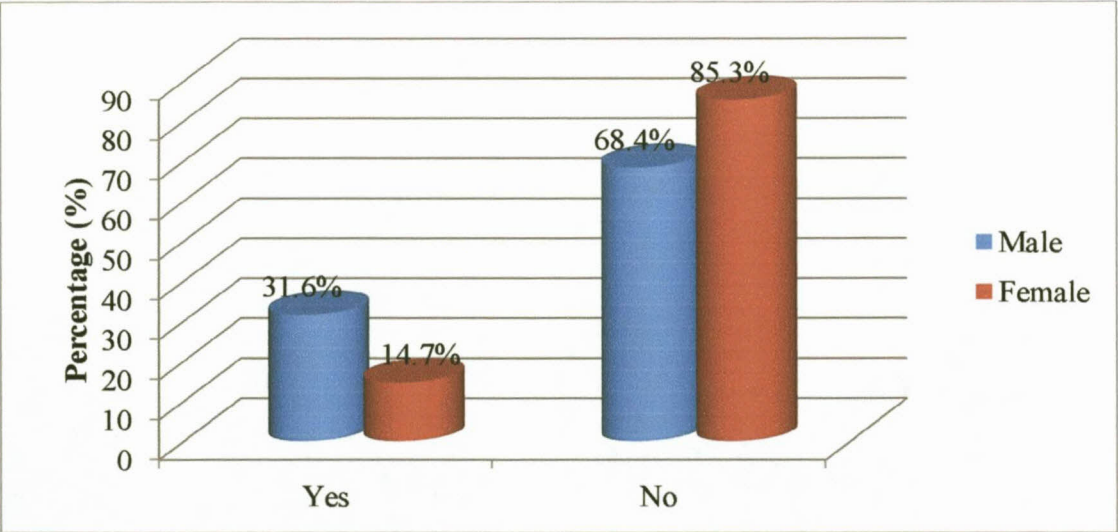
Figure 8: Respondents' level of referring to food labels for every kind of product (n=147)

The results indicated that (76.2%) of the respondents do not refer to food labels for all the products they purchase. The percentage female respondents who indicated that they do not read food labels of all products was significantly higher (85.3%) than the percentage of male respondents (68.4%) that indicate that they do not read food labels of all food products they purchase. These results correlate with the statement of Cowburn and Stockley (2004:24) that, consumers claim to read the labels of products that they are unfamiliar with. A study carried out by Silayoi and Speece (2007:1511) indicated though, that consumers preferred reading food labels of products they are familiar to and even more attracted to.

Question A1.a.6 asked the respondents whether they look at broad nutrition claims on food labels.

Table 7: Respondents' distribution on looking at broad nutrition claims on food labels (n=147)

Response/Gender	Yes (%)	No (%)	Total (%)
Male	43.0	57.0	100
Female	48.5	51.5	100
Total	45.6	54.4	100

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.444[a]	1	.505		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 30.99.
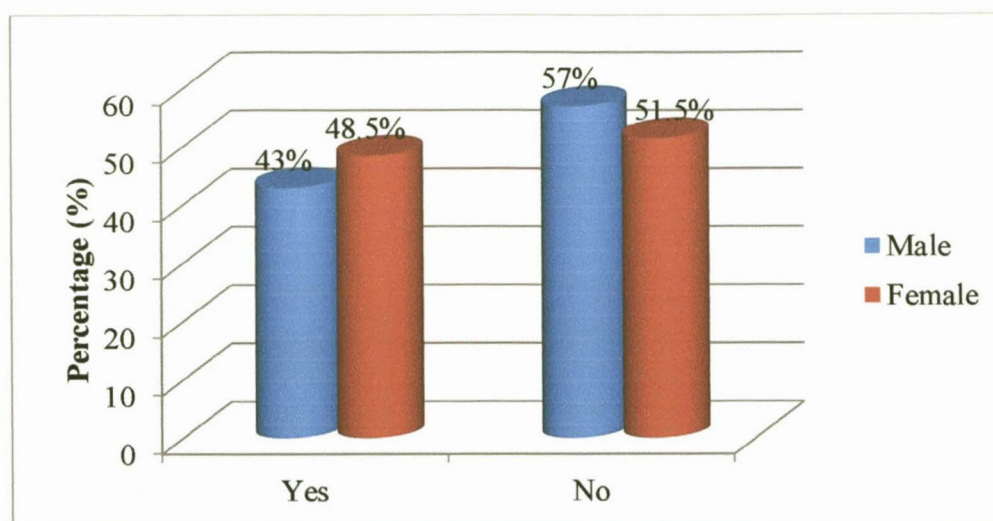
Figure 9: Respondents' level of looking at broad nutrition claims on food labels (n=147)

The results indicated that (45.6%) of the respondents read food labels to look at the broad nutrition claims on food labels while (54.4%) does not. It further showed that (57%) of the male respondents and (51.5%) of the female respondents do not read food labels for the broad nutrition claims. These results are alarming considering the aim of food labeling to inform the consumers and to promote healthier eating (Coulson, 2000:662). This might indicate that the respondents who do read their food labels look for specific ingredients that they need or want to omit. As shown from the results that a larger percentage of male respondents do not read food labels for the broad nutrition claims, Nayga (2000:98) support this result by revealing that, males perceive nutrition information as less important during food purchasing than females who are concerned with reducing health risks. This is contradicting with that of Silayoi and Speece (2007:1511) who stated that consumers strongly preferred for the detailed food label information, hence read food labels for broad nutrition claims. The results indicate a p=0.505, where there is no significant difference between the male and female respondents' looking at broad nutrition claims on food labels.

Question A1.a.7 asked the respondents whether they find food labels easy to understand.

Table 8: Respondents' distribution on finding food labels easy to understand (n=145)

Response/Gender	Yes (%)	No (%)	Total (%)
Male	59.0	41.0	100
Female	44.8	55.2	100
Total	52.4	47.6	100

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.913^a	1	.088		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 31.88.
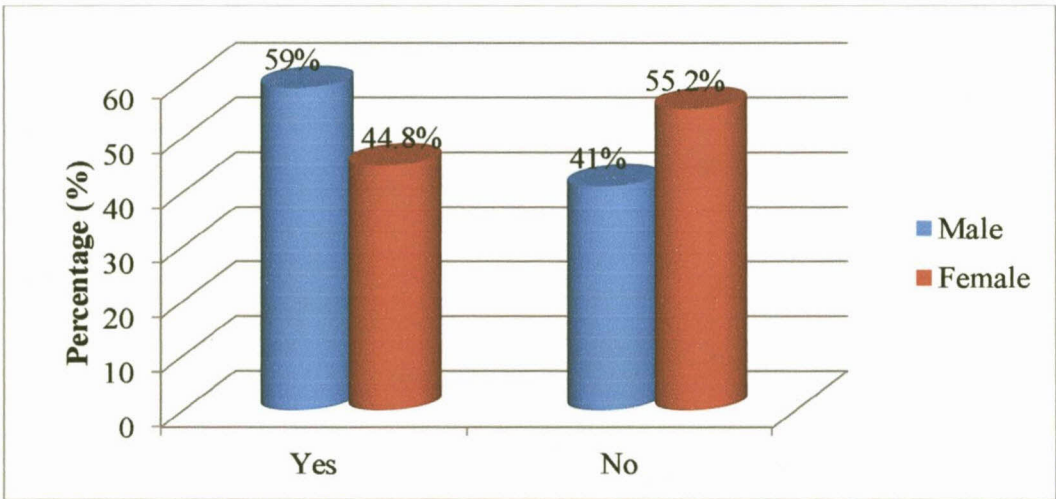
Figure 10: Respondents' level of finding food labels easy to understand (n=145)

The results indicated that (52.4%) of the respondents find food labels easy to understand and (47.6%) find it not easy to understand. A higher percentage of male respondents (59%) find it easy to understand while only 44.8% of the female respondents find it easy to understand. This is alarming; if students find it difficult to understand, it would mean that a large proportion of the general population would find it difficult to understand. Cowburn and Stockley (2004:23) agreed that consumers find it difficult to understand some information on food labels. Jay *et al.* (2009:25) warned that poor comprehension of food labels could be a barrier to food label use. Nørgaard and Brunsø (2009:598) stated that, nutritional knowledge may influence the

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understanding of food labels negatively. Indicated by (p=0.088), there is no significant difference in male and female respondents' finding food labels easy to understand.

Question A1.a.8 asked the respondents whether they read detailed information on food labels.

Table 9: Respondents' distribution on reading detailed information on food labels (n=147)

Response/Gender	Yes (%)	No (%)	Total (%)
Male	46.8	53.2	100
Female	27.9	72.1	100
Total	38.1	61.9	100

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.532ᵃ	1	.019		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 25.90.
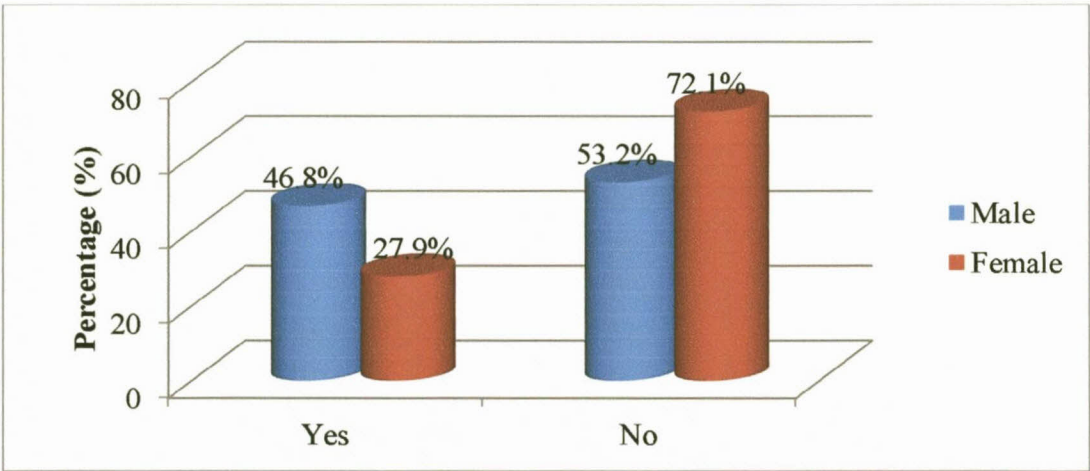
Figure 11: Respondents' level of reading detailed information on food labels (n=147)

Only (38.1%) of the respondents read food labels for detailed information, (61.9%) admit that they do not. Only 27.9% of the female respondents and 46.8% of the male respondents do read food labels for detailed information. Indicated by p=0.019, a significant difference between the male and female respondents did occurred. These results agree with the statement of Nørgaard and Brunsø (2009:601) that, consumers focus mainly on a limited amount of information during

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purchasing for a speedy and simple purchasing process. Cowburn and Stockley, (2004:24) said that, consumers claim to read labels while they do not read it.

Question A1.a.9 asked the respondents whether they read food labels because they have special needs related to diet and health.

Table 10: Respondents' level of reading food labels because they are consumers with special needs related to diet and health (n=146)

Response/Gender	Yes (%)	No (%)	Total (%)
Male	33.3	66.7	100
Female	27.9	72.1	100
Total	30.8	69.2	100

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.495[a]	1	.482		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 20.96.
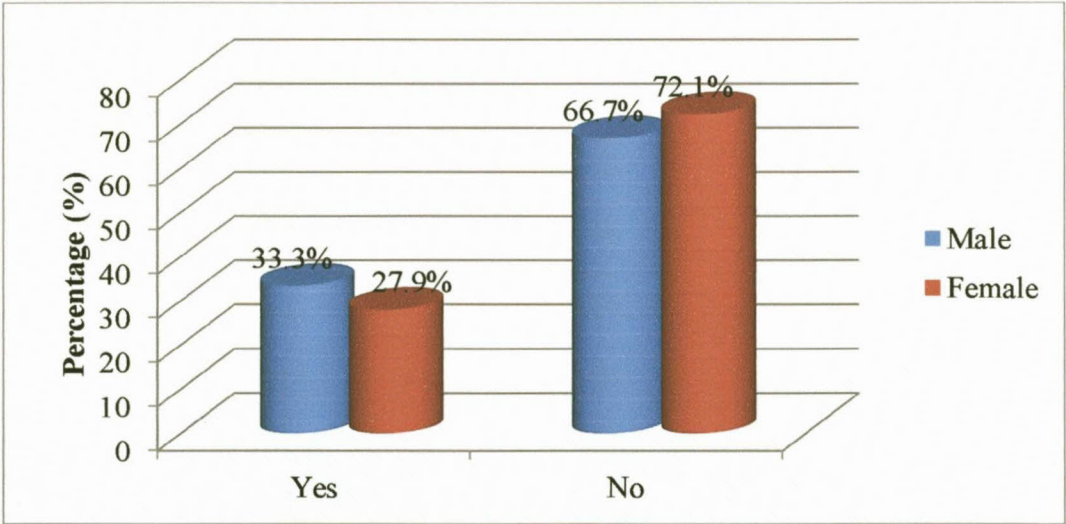
Figure 12: Respondents' level of reading food labels because they are consumers with special needs related to diet and health (n=146)

The results revealed that the 30.8% of respondents read the food label information because they have special needs related to diet and health and 69.2% do not. A slightly higher percentage of male respondents 33.3% than female respondents 27.9% read food labels because they have

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special needs. The 30.8% in this study was higher than the 17.8% who read food labels because they have special needs in another study (Goktolga, *et al.*, 2006:887). The results are shown in Figure 12. There is no significant difference (p>0.05) between the male and female respondents with regard to reading food labels because they have special needs related to diet and health.

4.3 THE UNDERSTANDING OF FOOD LABEL SYMBOLS/LOGOS

Question A1b1 gave the respondents an image of a symbol found on food labels and asked the respondents what information they get from the symbol. The researcher read the answer and coded it with 1 for a blank space indicating that the respondents did not know the answer, 2 for an incorrect interpretation and 3 for a correctly or partly correct interpretation.

Question A1.b.1 show the rBST free symbol:

Table 11: Percentage distribution of how respondents interpreted the rBST free symbol (n=150)

Response/Gender	Do not know (%)	Wrong answer (%)	Correct answer (%)	Total (%)
Male	74.1	22.2	3.7	100
Female	82.6	8.7	8.7	100
Total	**78.0**	**16.0**	**6.0**	**100**

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.156[a]	2	.046
a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 4.14.			
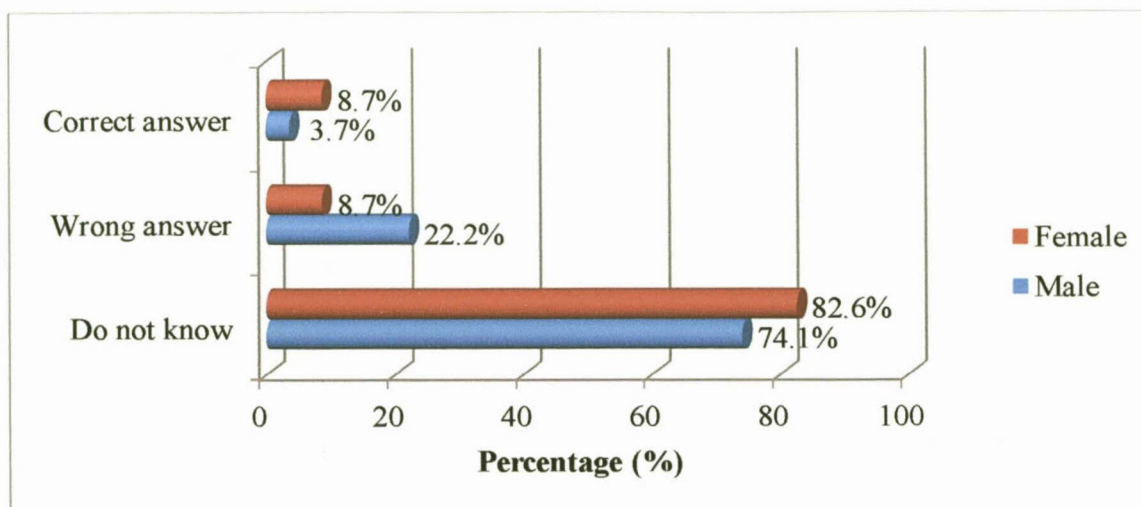
Figure 13: Percentage distribution of respondents interpreting the rBST free symbol (n=150)

The alarming results revealed that 78.0% of the respondents did not know the symbol, 16.0% thought that they know the answer but were wrong and only 6% actually know that the symbol indicate that the cows have not been given the hormone to increase their milk production and the milk product is tested to be free of the rBST hormone. Only 3.7% of the male respondents knew the meaning of this symbol while 22.2% thought that they knew but answered wrongly. A higher percentage of the female respondents 82.6% answered that they did not know while only 8.7% claim to know but they did not give the correct meaning, only 8.7% did know the correct meaning. Rayner, *et al.* (2001:27) stated that, consumers actively look for symbols/logos on food labels while gathering information about the product in order to evaluate. Cornelisse-Vermaat, *et al.* (2008:675) noted that, consumers understand a well detailed food label when symbols are supplied with sufficient information. The results of this study revealed clearly that this symbol does not carry any useful information for these students as they do not know the meaning of it. This symbol should be applied with more detailed information for consumers to interpret it correctly. There is a significant difference between the male and female respondents on this issue as indicated by p=0.046.

Question A1.b.2 show the Saturated fat index symbol:

Table 12: Percentage distribution of how respondents interpreted the Saturated fat index symbol (n=150)

Response/Gender	Do not know (%)	Wrong answer (%)	Correct answer (%)	Total (%)
Male	56.8	38.3	4.9	100
Female	44.9	34.8	20.3	100
Total	51.3	36.7	12.0	100

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.463[a]	2	.015

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.28.
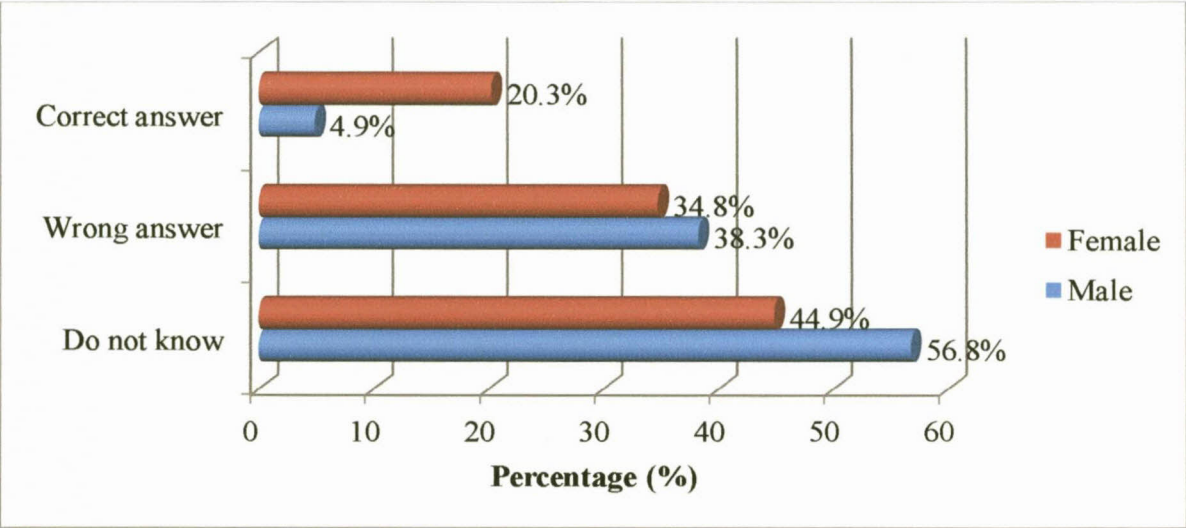
Figure 14: Percentage distribution of respondents interpreting the Saturated fat index symbol (n=150)

The results showed that 51.3% of the respondents do not know the meaning of this symbol, 36.7% interpret it wrongly and only 12.0% interpret it correctly. The female respondents performed better than the male respondents with 20.3% giving the correct answer while only 4.9% of the male respondents gave the correct answer. 38.3% male respondents and 34.8% female respondents answered wrongly respectively. These results are alarming for a symbol that conveys very important health information. Ketterer (2010:1) stated that saturated fat is an animal fat that might cause cholesterol and have to be used sparingly, thus, a product should bear a label with levels ranging from low fat of 1.5g per 100g in solid or 0.75g per 100ml of liquids. Consumers are recommended to consume less than 10% of kilojoules from saturated fatty acids

(Evans, 2008:1) in order to live healthy. The results revealed a significant difference between the male and female respondents interpretation of this symbol on this question as indicated by p=0.015.

Question A1.b.3 show the Bfs/ucD Milchik certification symbol to inform the concerned consumers that there are no meat derived ingredients in their dairy product:

Table 13: Percentage distribution of how respondents interpreted the Bfs/ucD Milchik certification symbol (n=149)

Response/Gender	Do not know (%)	Wrong answer (%)	Correct answer (%)	Total (%)
Male	88.8	11.3	0.0	100
Female	92.8	7.2	0.0	100
Total	90.6	9.4	0.0	100

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.698[a]	1	.404		
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.48.					
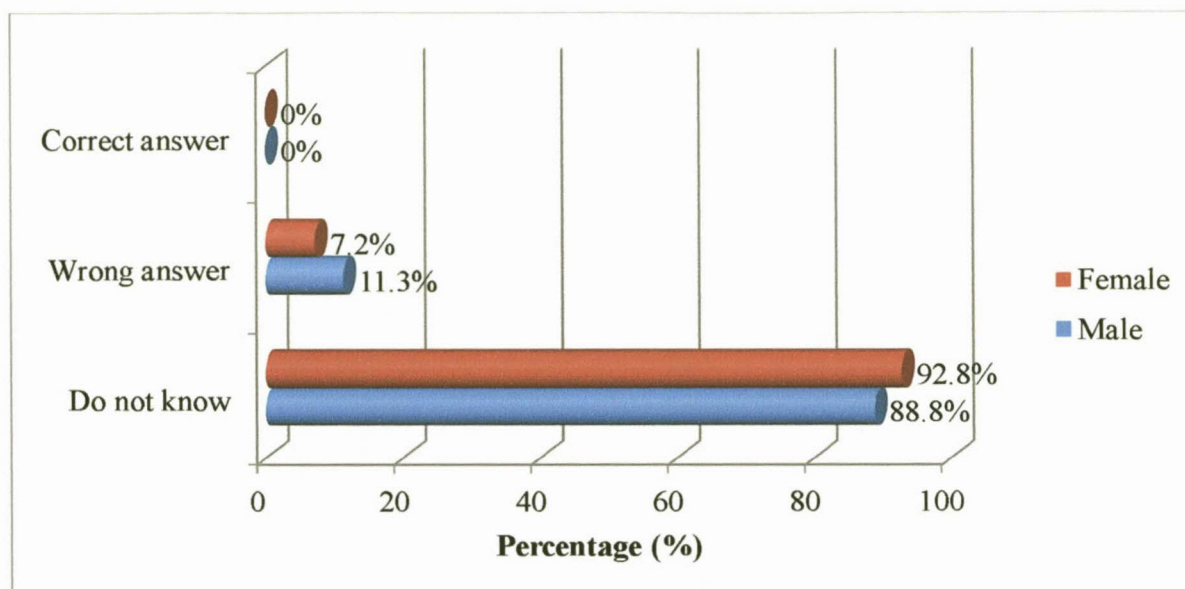
Figure 15: Percentage distribution of respondents interpreting the Bfs/ucD Milchik certification symbol (n=149)

The results showed that 90.6% of the respondents did not know the meaning while 9.4% gave the wrong answer and none gave the correct answer. More female respondents 92.8% did not know the meaning while 88.8% of male respondents also did not know the meaning of the symbol. More male respondents 11.3% opposed to 7.2% female respondents did think they know the meaning though they answered wrongly. The meaning of this symbol is religion related and it might explain why nobody knew the meaning. The symbol is a Jewish one that they use for certification on food labels to inform the concerned consumers that there is no meat derived ingredients in their dairy products (Clover, 2010:1). The results revealed no significant difference between the male and female respondents on this question as indicated by p=0.404.

Question A1.b.4 gave the respondents the Guideline Daily Amounts (GDA) symbol for energy, sugar, fat, saturated fatty acids and salt per serving:

Table 14: Percentage distribution of how respondents interpreted the Guideline Daily Amounts (GDA) symbol (n=149)

Response/Gender	Do not know (%)	Wrong answer (%)	Correct answer (%)	Total (%)
Male	51.2	43.8	5.0	**100**
Female	50.7	36.2	13.0	**100**
Total	**51.0**	**40.3**	**8.7**	**100**

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.269^a	2	.195
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.02.			
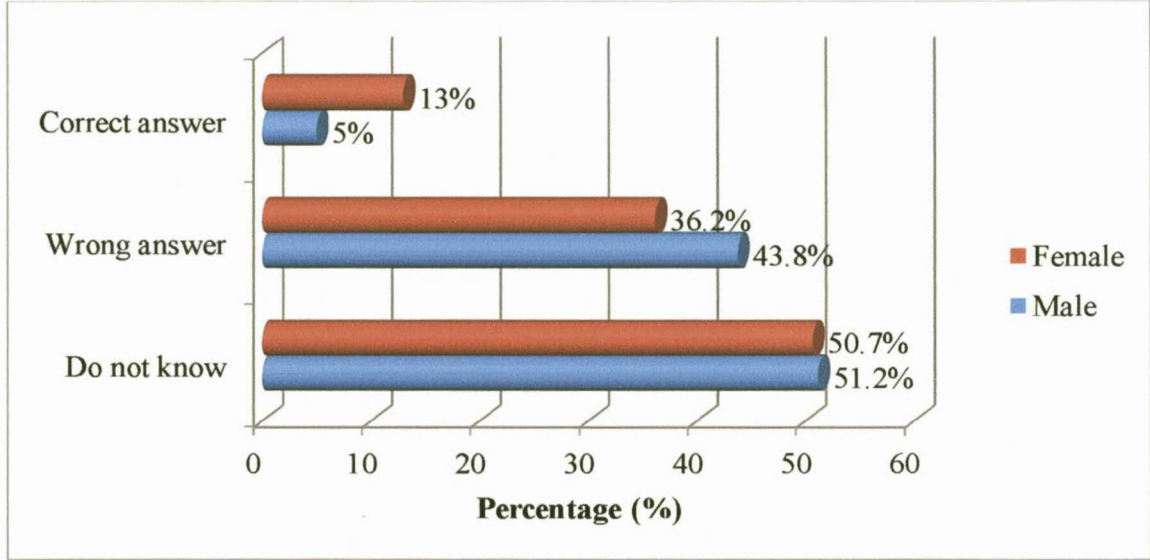
Figure 16: Percentage distribution of respondents interpreting the Guideline Daily Amounts (GDA) symbol (n=149)

The results showed that 51.0% of the respondents did not know (51.2% males and 50.7% females), 40.3% answered incorrectly and only 8.7% (5.0% males and 13.0% females) understood the information on the symbol correctly. Once again, very important information in terms of health not understood by these young consumers. Feunekes, *et al.* (2008:58) revealed that the Guideline Daily Amounts (GDA) symbol shows the amount in gram and percentages of guidelines daily amounts for energy, sugar, fat, saturated fatty acids and salt per serving. The results revealed no significant difference between the male and female respondents on this question as indicated by p=0.195.

Question A1.b.5 show the South African Bureau of Standards (SABS) approved symbol:

Table 15: Percentage distribution of how respondents interpreted the South African Bureau of Standards (SABS) approved symbol (n=149)

Response/Gender	Do not know (%)	Wrong answer (%)	Correct answer (%)	Total (%)
Male	45.0	31.3	23.8	100
Female	39.1	14.5	46.4	100
Total	42.3	23.5	34.2	100

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.272[a]	2	.006

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 16.21.
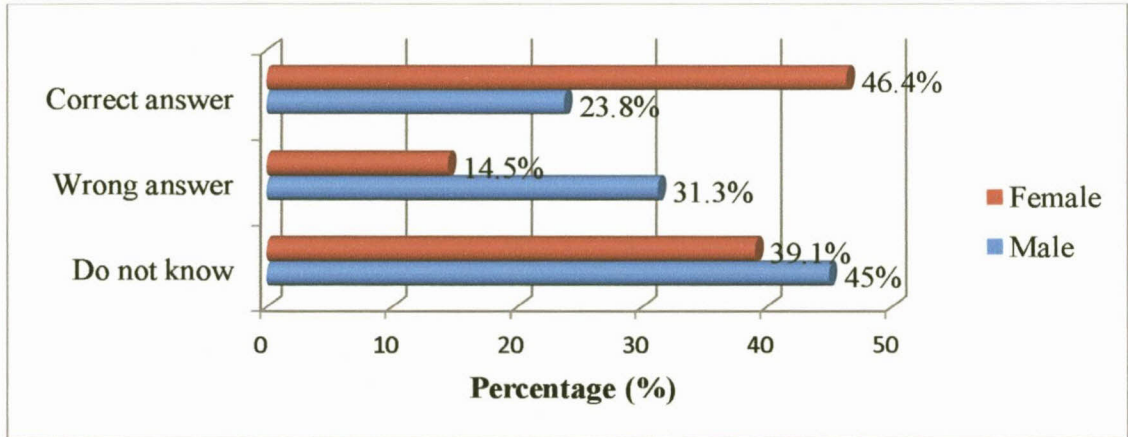
Figure 17: Percentage distribution of respondents interpreting the South African Bureau of Standards (SABS) approved symbol (n=149)

The results showed that 42.3% of the respondents (45.0% males and 39.1% females) did not know what the symbol mean while 23.5% (31.3% males and 14.5% females) thought that they knew but did not while 34.2% (23.8% males and 46.4% females) did know the correct meaning of this symbol. Once again it is alarming that more respondents did not know the meaning of this symbol. The SABS Auditors (2010:1) stated that the South African Bureau of Standards (SABS) approved symbol is a highly recognizable one for credibility and a powerful marketing tool,

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which reinforces a product's intrinsic features and product conforming to a specific South African or International standard. The results revealed a significant difference between the male and female respondents on this question as indicated by p>0.006.

Question A1.b.6 shows the respondents the Heart Mark symbol:
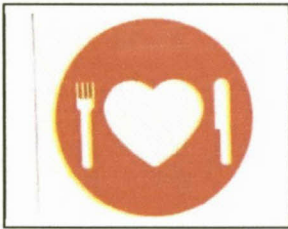
Table 16: Percentage distribution of how respondents interpreted the Heart Mark symbol (n=149)

Response/Gender	Do not know (%)	Wrong answer (%)	Correct answer (%)	Total (%)
Male	30.0	32.5	37.5	**100**
Female	27.5	20.3	52.2	**100**
Total	**28.9**	**26.8**	**44.3**	**100**

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.936ª	2	.140
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 18.52.			
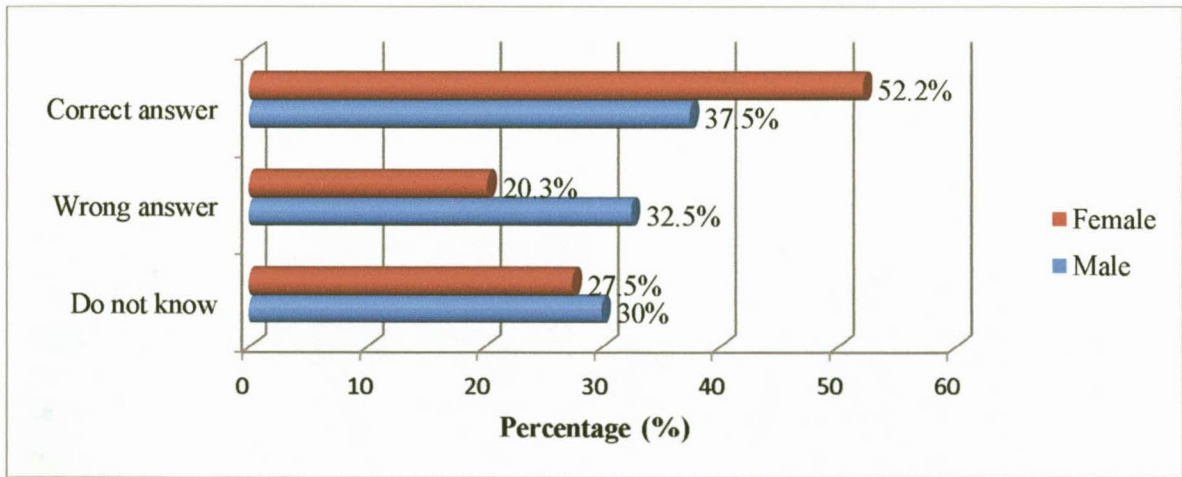
Figure 18: Percentage distribution of respondents interpreting the Heart Mark symbol (n=149)

The results showed that even this 'well known' symbol was not known to 28.9% (30.0% male and 27.5% female) respondents and wrongly interpreted it 26.8% (32.5% male and 20.3% female) respondents but it was correctly interpreted by 44.3% (37.5% male and 52.2% female) respondents. The Heart Mark symbols means that the products are tested and meet certain nutritional criteria as stipulated by the Heart and Stroke Foundation, the product should be low in saturated fat, cholesterol, sugar and sodium and where relevant high in fibre (Ketterer, 2010:1). The results revealed no significant difference between the male and female respondents on this question as indicated by (p=0.140). (Higginson, *et al.*, 2002:151) also stated that consumers' are often merely aware of food labels without extensively interpreting them.

Question A1.b.7 shows the respondents the Halaal certification symbol:
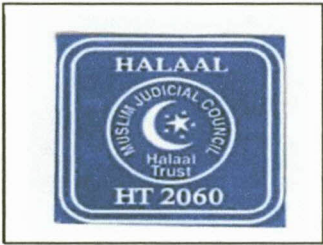
Table 17: Percentage distribution of how respondents interpreted the Halaal certification symbol (n=148)

Response/Gender	Do not know (%)	Wrong answer (%)	Correct answer (%)	Total (%)
Male	40.5	46.8	12.7	100
Female	34.8	47.8	17.4	100
Total	**37.8**	**47.3**	**14.9**	**100**

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.882[a]	2	.644
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.26.			
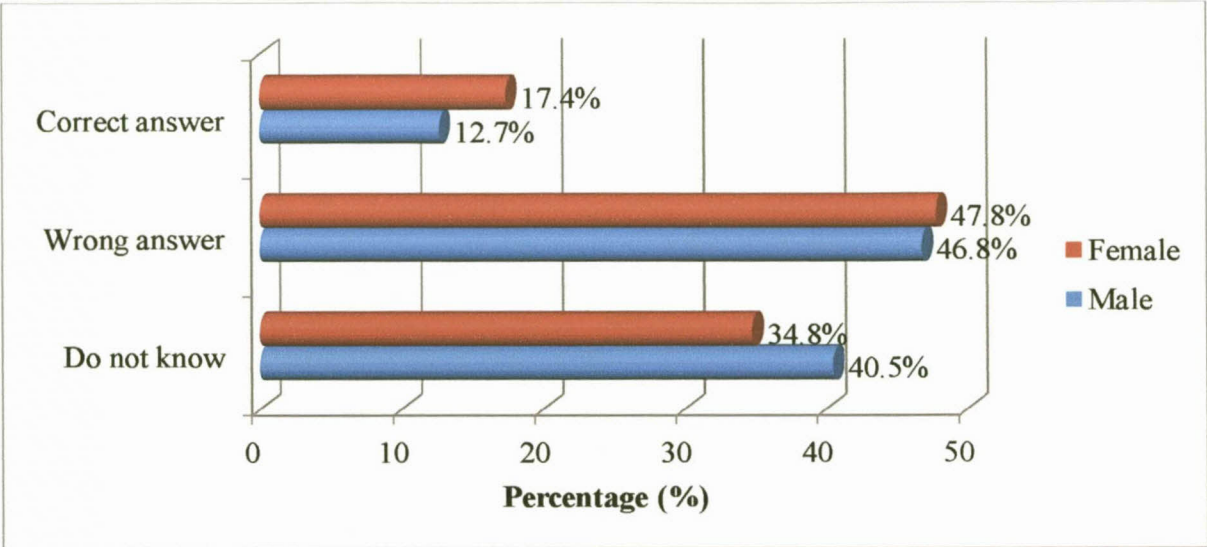
Figure 19: Percentage distribution of respondents interpreting the Halaal certification symbol (n=148)

The results showed that 37.8% of the respondents did not know the meaning while 47.3% did answer but incorrectly, only 14.9% gave the correct answer. More male respondents (40.5%) did not know the meaning while (34.8%) of the female respondents also did not know the symbol. More female respondents (47.8%) opposed to (46.8%) male respondents answered wrongly but 17.4% female and 12.7% male respondents know the meaning of this symbol. The symbol is religion related and it might explain why such a low percentage does know the meaning. Clover (2010:1) stated that, the Halaal certification symbol is a way in which the Islam certifies their products to consumers that they do not contain pork derived ingredients or alcohol, because according to their religious laws they cannot consume these products. The results revealed no significant difference between the male and female respondents on this question as indicated by p=0.644.

Question A1.b.8 shows the respondents the GIFSA symbol:
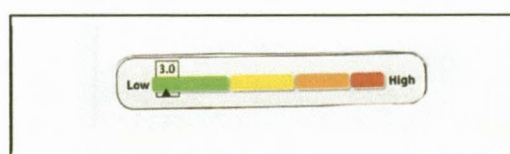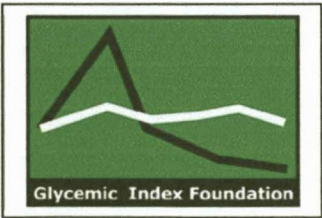
Table 18: Percentage distribution of how respondents interpreted the GIFSA symbol (n=149)

Response/Gender	Do not know (%)	Wrong answer (%)	Correct answer (%)	Total (%)
Male	93.8	6.3	0.0	**100**
Female	73.9	20.3	5.8	**100**
Total	**84.6**	**12.8**	**2.7**	**100**

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.088[a]	2	.002

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.85.
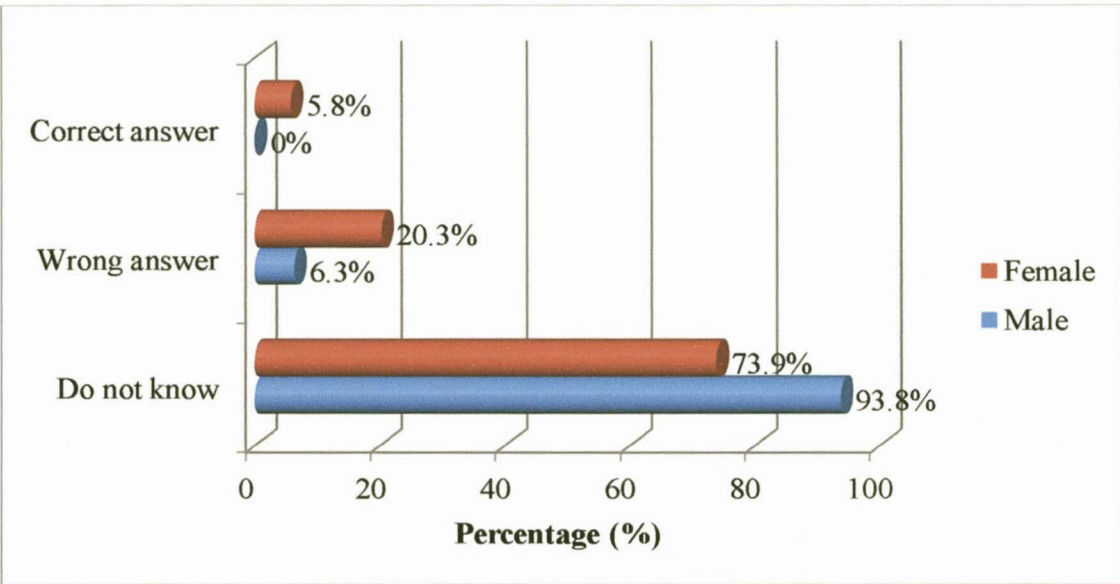
Figure 20: Percentage distribution of respondents interpreting the GIFSA symbol (n=149)

The results showed that the Glycemic Index graph was not known to 84.6% (93.8% male and 73.9% female) respondents, another 12.8% interpreted it wrongly (6.3% male and 20.3% female), it was correctly interpreted by 2.7% only (5.8% female) respondents but none male respondents. The GIFSA symbol indicates that the endorsed products with this symbol means that the products is healthy and has a reduced amount of total fat, saturated fat, sodium, fibre, sugar content and sodium (Delport and Steenkamp, 2010:1). The 'green' mark on the symbol certifies that the product has a minimal effect on blood glucose, cholesterol and/or blood pressure levels (Delport and Steenkamp, 2010:1). The results revealed a significant difference between the male and female respondents on this question as indicated by p=0.002.

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Question A1.b.9 shows the respondents the allergy warning symbol:

Table 19: Percentage distribution of how respondents interpreted the allergy warning symbol (n=148)

Response/Gender	Do not know (%)	Wrong answer (%)	Correct answer (%)	Total (%)
Male	64.6	15.2	20.3	**100**
Female	43.5	11.6	44.9	**100**
Total	**54.7**	**13.5**	**31.8**	**100**

| Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.403[a]	2	.006
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.32.			
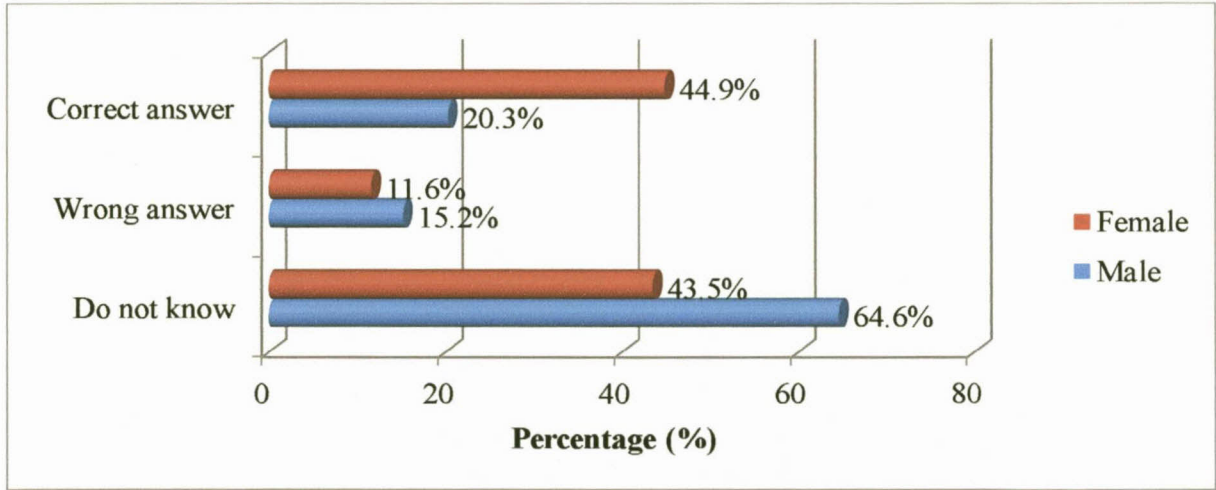
Figure 21: Percentage distribution of respondents interpreting the allergy warning symbol (n=148)

The results showed that 54.7% of the respondents do not know the meaning of this symbol, 13.5% interpret it wrongly and only 31.8% interpret it correctly. The female respondents were more familiar with the meaning than the male respondents with 44.9% giving the correct answer

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while only 20.3% of the male respondents gave the correct answer. However, 15.2% male respondents and 11.6% female respondents answered wrongly. These results are alarming for a symbol that conveys very important health information. This symbol is an allergy warning which means that a product that contain milk, wheat and gluten substances must be labeled with it and consumers allergic to these substances must not consume the product (Lapid, 2008:1). Hattersley and Chan (2010:65-72) stated that, consumers interpret the labeling of allergens differently with regard to different levels of health risks and food manufacturers have to improve the way they label allergens for easy communication with the consumers. Furthermore, Codex General Standards requires the labeling of allergens even if they are in a form of sub-ingredient or genetically modified organism (Randell, 2010:12). The results revealed a significant difference between the male and female respondents on this question as indicated by p=0.006.
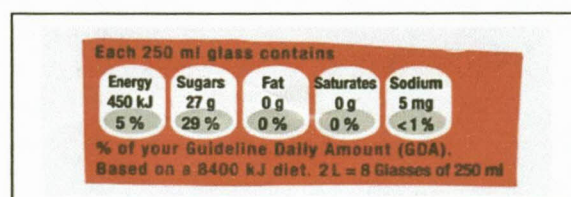
Question A1.b.10 shows the respondents the Low-GI+ symbol (image):
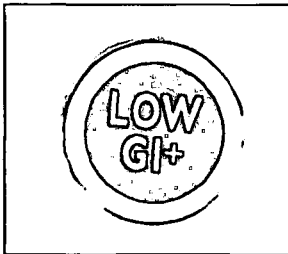
Table 20: Percentage distribution of how respondents interpreted the Low-GI+ symbol (n=149)

Response/Gender	Do not know (%)	Wrong answer (%)	Correct answer (%)	Total (%)
Male	66.3	31.3	2.5	100
Female	49.3	36.2	14.5	100
Total	58.4	33.6	8.1	100

| Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.718[a]	2	.013
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.56.			
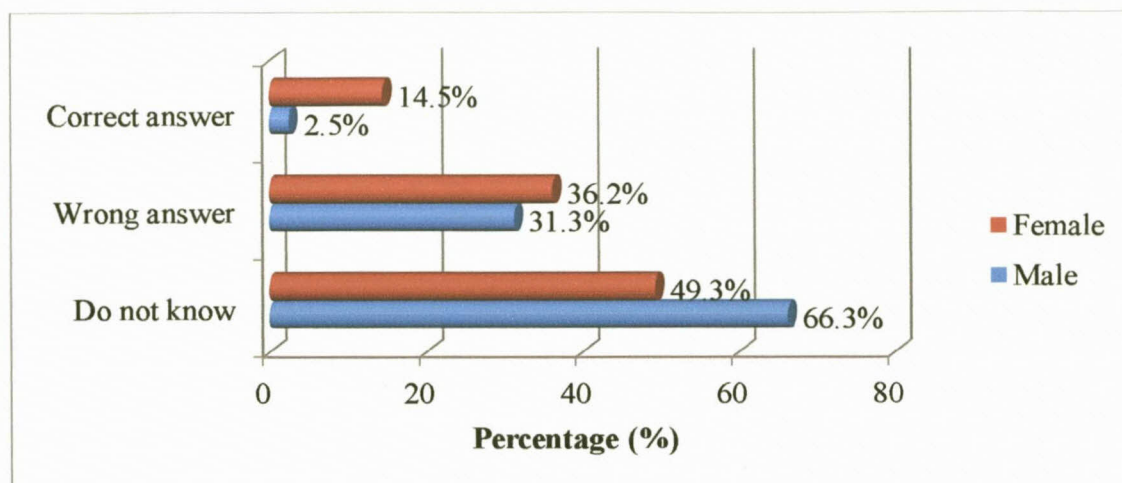
Figure 22: Percentage distribution of respondents interpreting the Low-GI+ symbol (n=149)

The results showed that this symbol was not known to 58.4% (66.3% male and 49.3% female) respondents and wrongly interpreted by 33.6 % (31.3% males and 36.2% females), correctly interpreted by only 8.1% (2.5% male and 14.5% female) respondents. The Low-GI+ symbols indicate that products may reduce the risk of diabetes, cardiovascular disease, metabolic syndrome, chronic inflammation and possibly some types of cancer (Wolever, *et al.*, 2008:247S) because products releases glucose slowly and steadily into the bloodstream without over stimulating the pancreas to produce too much insulin. The results revealed a significant difference between the male and female respondents on this question as indicated by p=0.013.

The results obtained from question 1.b.1-10 are alarming but not completely unexpected. Higginson, *et al.*, (2002:151) stated that consumers' are often merely aware of food labels without extensively interpreting them. The female respondents tend to understand the meaning correctly more often while the male respondents more often interpreted the meaning incorrectly. These results show a serious need for information to consumers, the new food labeling law would be of very little value if the consumers are not able to interpret the information.

4.4 THE IMPORTANCE OF FOOD LABEL SYMBOLS/LOGOS

Question A1.c asked the respondents to indicate how important they consider certain symbols. The scale allow: 1- not important at all, 2- fairly important, 3- undecided, 4- fairly important, 5- very important and 6- do not know.

Question A1.c.1 shows the respondents the Green dot symbol and how important they consider it:
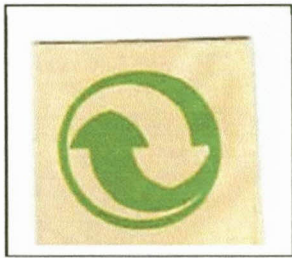
Table 21: Percentage distribution of respondents interpreting the Green Dot symbol (n=149)

Response/ Gender	Not important at all (%)	Fairly important (%)	Undecided (%)	Fairly important (%)	Very important (%)	Do not know (%)	Total (%)
Male	12.5	12.5	8.8	21.3	31.3	13.8	**100**
Female	7.2	8.7	15.9	30.4	24.6	13.0	**100**
Total	**10.1**	**10.7**	**12.1**	**25.5**	**28.2**	**13.4**	**100**

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.915^a	5	.426

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.95.

The results indicated that 10.1% respondents considered the green dot symbol not important at all, 10.7% said fairly unimportant, 12.1% was undecided, (25.5%) considered it fairly important, 28.2% considered it very important while 13.4% did not know the symbol. The majority of the respondents considered the symbol important. A significant difference with regard to the importance of food label symbols between the male and female respondents was not evident from the results, as indicated by p=0.426. The green dot symbol is used to indicate that packaging materials are minimised and the packaging material is easy to recycle (Anderson,

2010:1). The assumption is made that the majority of respondents support the use of less and recyclable packaging material.

Question A1.c.2 shows the respondents the vegetarian symbol and asked how important they consider it:

Table 22: Percentage distribution of respondents interpreting the vegetarian symbol (n=150)

Response/ Gender	Not important at all (%)	Fairly important (%)	Undecided (%)	Fairly important (%)	Very important (%)	Do not know (%)	Total (%)
Male	14.8	16.0	12.3	22.2	23.5	11.1	100
Female	11.6	11.6	15.9	26.1	30.4	4.3	100
Total	13.3	14.0	14.0	24.0	26.7	8.0	100

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.205[a]	5	.520
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.52.			

The results indicated that 24.5% of the respondents consider the vegetarian symbol fairly important and 26.7% considered it very important. The female respondents tend to consider it more important with 26.1% fairly important and 30.4% very important as opposed to their male counterparts who consider the symbol less important with 22.2% fairly important and 23.5% very important. There is no significant difference with regard to the importance of the vegetarian symbol between the male and female respondents, as indicated by p=0.520. The food label symbol indicate that products endorsed with it are suitable for vegetarians and does not contain any meat or animal-derived additives such as gelatine derived from animal ligaments, skins, tendons, bones, etc. and in cheese making, that the animal-derived rennet has not been used (Food Standards Agency, 2004:1).

Question A1.c.3 shows the respondents the Organic symbol and asked them whether they consider it important:

Table 23: Percentage distribution of respondents interpreting the Organic symbol (n=150)

Response/ Gender	Not important at all (%)	Fairly important (%)	Undecided (%)	Fairly important (%)	Very important (%)	Do not know (%)	Total (%)
Male	8.6	3.7	22.2	28.4	23.5	13.6	100
Female	8.7	5.8	15.9	26.1	37.7	5.8	100
Total	8.7	4.7	19.3	27.3	30.0	10.0	100

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.953^a	5	.311

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 3.22.

The results indicated that the majority of respondents consider the organic symbol fairly important (27.3%) or very important (30.0%). It further pointed out that 37.7% of the female respondents perceived it as very important as compared to 23.5% male respondents. There is no significant difference with regard to the importance of the organic symbol between the male and female respondents, as indicated by p=0.311. If a product bears a certified 100% organic symbol, it indicates that it is produced entirely from organic raw materials and was not treated with pesticides though it does not indicate whether or not the product has genetically modified food ingredients (Holmes, 2007:2). This result concur with (Rayner, *et al.,* 2001:27) who stated that, occasionally, consumers use food label symbols to gather information about the product in order to help them make informed food choices. In South African, organic products are certified by Afrisco/Ecocert, who annually inspects producers for certification (Vermeulen and Bienabe, 2007:11).

Question A1.c.4 shows the EcorCert symbol and asked the respondents whether they consider it important:

Table 24: Percentage distribution of respondents interpreting the EcoCert symbol (n=150)

Response/ Gender	Not important at all (%)	Fairly important (%)	Undecided (%)	Fairly important (%)	Very important (%)	Do not know (%)	Total (%)
Male	13.6	8.6	29.6	19.8	6.2	22.2	**100**
Female	10.1	5.8	27.5	18.8	10.1	27.5	**100**
Total	**12.0**	**7.3**	**28.7**	**19.3**	**8.0**	**24.7**	**100**

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.012[a]	5	.847
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.06.			

The results indicate that 28.7% of the respondents were undecided on the importance of this symbol while 24.7% did not know the meaning of the symbol; only 8.0% consider it very important. The difference between male and female respondents was very small on this issue. There is no significant difference with regard to the importance of the EcoCert symbol between the male and female respondents, as indicated by $p=0.847$. It would most probably be safe to say that the 28.7% are undecided because they do not really know the symbol and it once again emphasize the need for information for the consumer. These results does not agree with claims in the literature that environmental characteristics of products have become increasingly important to consumers and food manufacturers endorse the eco-labels on their products to confirm environmental traits of the product (Teisl, *et al.*, 2002:339). It is assumed that products with the EcoCert symbol are of good quality and organically produced (EcoCert Professionalism and Services, 2010:1).

Question A1.c.5 shows the anti-oxidant symbol and asked the respondents whether they consider it important:
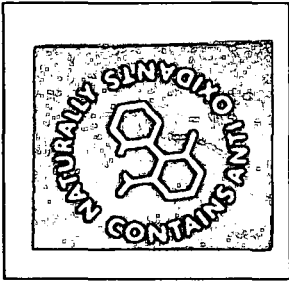
Table 25: Percentage distribution of respondents interpreting the anti-oxidant symbol (n=150)

Response/ Gender	Not important at all (%)	Fairly important (%)	Undecided (%)	Fairly important (%)	Very important (%)	Do not know (%)	Total (%)
Male	8.6	7.4	21.0	27.2	18.5	17.3	100
Female	8.7	7.2	33.3	21.7	17.4	11.6	100
Total	8.7	7.3	26.7	24.7	18.0	14.7	100

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.424[a]	5	.635
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.06.			

The results indicated that 26.7% of the respondents were undecided on the importance of this symbol while 24.7% indicated that the symbol is fairly important to them, 18.0% considering it very important while 14.7% did not know the meaning of the symbol. The difference between male and female respondents was very small on this issue. Therefore, there is no significant difference with regard to the importance of the anti-oxidant symbol between the male and female respondents, as indicated by p=0.635. Anti-oxidants are substances that protect consumers from damage caused by free radicals which are produced in the human body as part of its normal metabolic processes and are needed to relieve stress and cure certain illnesses (Ketterer, 2010:1). Therefore, the results of this study proved that with more respondents perceiving the symbol as important to them since they will use it to purchase products with it.

Question A1.c.6 show the High dietary fibre symbol and asked the respondents whether they consider it important:

Table 26: Percentage distribution of respondents interpreting the High dietary fibre symbol (n=150)

Response/ Gender	Not important at all (%)	Fairly important (%)	Undecided (%)	Fairly important (%)	Very important (%)	Do not know (%)	Total (%)
Male	9.9	9.9	16.0	23.5	32.1	8.6	100
Female	7.2	8.7	11.6	34.8	30.4	7.2	100
Total	8.7	9.3	14.0	28.7	31.3	8.0	100

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.672[a]	5	.750
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.52.			

The results indicated that the majority of respondents consider the High dietary fibre symbol fairly important (28.7%) and very important (31.3%). It further point out that 32.1% of the male respondents perceived it as very important as compared to 30.4% female respondents. There is no significant difference with regard to the importance of the High dietary fibre symbol between the male and female respondents, as indicated by p=0.750. Both male and female respondents are aware of the importance of the symbol which might aid them in selecting a healthy diet.

4.5 THE USE OF THE GLYCEMIC INDEX FOUNDATION FOR SOUTH AFRICA (GIFSA) LOGO

Question A1.d was asked to determine whether the respondents understand and use the GIFSA logo and how they perceive it.

Glycemic Index Foundation
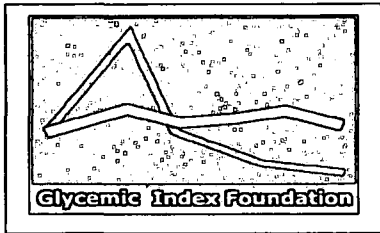
Question A1.d.1 asked the respondents how difficult or easy is the indicator to understand.

Table 27: Respondents' percentage distribution on the difficulty of use of the Glycemic index foundation logo (n=144)

RESPONSE/GENDER	MALE (%)	FEMALE (%)	TOTAL (%)
Very difficult	33.3	25.8	29.9
Difficult	29.5	21.2	25.7
Undecided	20.5	25.8	22.9
Easy	10.3	22.7	16.0
Very easy	6.4	4.5	5.6
TOTAL (%)	100	100	100

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.774[a]	4	.217

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 3.67.

The results shown in table 27 revealed that 29.9% of the respondents considered the GIFSA logo very difficult to understand, 25.7% considered it difficult to understand, 22.9% could not decide whether it is difficult or not, 16.0% considered it easy to understand while 5.6% considered it very easy to understand. The percentage of the male respondents who considered it very difficult (33.3%) and difficult (29.5%) to understand was higher than that of the female respondents (25.7%) and (21.2%) respectively. In contrast, only a small percentage of male (6.4%) and female (4.5%) respondents indicated that the logo is very easy to use. Therefore, table 18 showed that they do not know the symbol and therefore would not understand it. It would be expected that as consumers become more aware of healthy eating, they tend to read information on food labels and find it easy to understand and use (Jacobs, *et al.,* 2010:2), but the results of table 2

contradict that. A significant difference between male and female respondents with regard to this health indicator logo was not evident from the results, as indicated by p=0.217.

Question A1.d.2 asked the respondents how credible this health indicator is for them.

Table 28: Respondents' percentage distribution on the credibility of the Glycemic index foundation logo (n=141)

RESPONSE/GENDER	MALE (%)	FEMALE (%)	TOTAL (%)
Not credible at all	25.0	12.3	19.1
Not credible	28.9	18.5	24.1
Undecided	23.7	41.5	31.9
Credible	18.4	21.5	19.9
Extremely credible	3.9	6.2	5.0
TOTAL (%)	100	100	100

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.559[a]	4	.073

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 3.23.

The results in table 28 showed that 31.9% respondents were undecided, 19.1% and 24.1% said that it was not at all and not credible respectively while 19.9% stated that it was credible. Among the female respondents, 41.5% were undecided on this question. There is a possibility that the respondents did not understand the question and therefore prefer the neutral answer. A significant difference between male and female respondents with regard to this question was not evident from the results, as indicated by p=0.073. This logo is seen on selected products such as breads, ready to eat cereals, etc. to indicate that the product is healthy and has a minimal effect on blood glucose, cholesterol and/or blood pressure levels (Delport and Steenkamp, 2010:1). The difference was not significant and thus not reason for distinction between male and female respondents indicating that they do not consider it credible might be an indication that they doubt the value of other information on food labels as well.

Question A1.d.3 asked the respondents how healthy the product will be to them.

Table 29: Respondents' percentage distribution on the healthiness of the product (n=144)

RESPONSE/GENDER	MALE (%)	FEMALE (%)	TOTAL (%)
Not healthy at all	10.1	6.2	8.3
Not healthy	6.3	4.6	5.6
Undecided	50.6	49.2	50.0
Healthy	21.5	36.9	28.5
Very healthy	11.4	3.1	7.6
TOTAL (%)	100	100	100

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.078[a]	4	.132

a. 3 cells (30.0%) have expected count less than 5. The minimum expected count is 3.61.

The results in table 29 showed that 50.0% respondents were undecided with 50.6% male and 49.2% female respondents respectively. The results also revealed that (28.5%) of the respondents said that it would be healthy (21.5% male and 36.9% female respondents). The fact that 84.6% did not know what it mean in question A1.b8, indicated that the 28.5% guessed that it would be healthy to them. These results concur with those of Drichoutis, et al. (2006:3), when they said that, more females than males use the nutrition label since males are of the opinion that nutritional information is not important and cannot assist them make healthy food choices. Once again the results indicated that the respondents do not understand the indicator and therefore rather answer with undecided. However, significant difference between male and female respondents with regard to this question was not evident from the results, as indicated by p=0.132.

Question A1.d.4 asked the respondents how important the indicator is to them.

Table 30: Respondents' percentage distribution on the importance of the indicator (n=144)

RESPONSE/GENDER	MALE (%)	FEMALE (%)	TOTAL (%)
Not important	19.2	19.7	19.4
Slightly unimportant	26.9	12.1	20.1
Undecided	30.8	42.4	36.1
Slightly important	11.5	16.7	13.9
Very important	11.5	9.1	10.4
TOTAL (%)	100	100	100

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.121ᵃ	4	.190

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.88.

The results of table 30 revealed that 36.1% of respondents were undecided whether the indicator is important to them or not (30.8% male and 42.4% female respondents respectively). The same percentage of male respondents (11.5%) perceived the indicator as slightly important and very important respectively while 16.7% and 9.1% female respondents also perceived it as slightly important and very important respectively. On the other hand, 19.4% of female and 19.2% male respondents perceived the indicator as not important. The larger percentage undecided once again can be explained by the 84.6% who indicated in question A1.b8 that they do not know the symbol. They cannot say whether it is important if they do not know the meaning. It is evident from the results that there is no significant difference between male female respondents with regard to this question as indicated by p=0.190.

Question A1.d.5 asked the respondents how often they check for this label before they buy products.

Table 31: Respondents' distribution on the use of the Glycemic index foundation logo (n=144)

RESPONSE/GENDER	MALE (%)	FEMALE (%)	TOTAL (%)
Never	58.2	60.0	59.0
Seldom	16.5	13.8	15.3
Sometimes	15.2	18.5	16.7
Often	6.3	3.1	4.9
Every time	3.8	4.6	4.2
TOTAL (%)	100	100	100

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.240[a]	4	.871

a. 4 cells (40.0%) have expected count less than 5. The minimum expected count is 2.71.

The results of table 31 revealed that 59.0% of respondents never check for the label before they buy products (58.2% male and 60.0% female respondents respectively). On the other hand, 4.2% of the respondents said that they check for the indicator every time when they buy product (3.8% male and 4.6% female respondents), but only 2.7% of them did understand the meaning of it in question A1.b8. No significant difference between male and female respondents with regard to this question as indicated by $p=0.871$.

4.6 THE IMPORTANCE OF THE FOOD LABEL ATTRIBUTES

Question A2.a asked the respondent to indicate how important he/she consider different attributes of food labels.

Question A2.a.1 asked about the importance of preparation and cooking instructions.

Table 32: Percentage distribution of respondents perceiving preparation and cooking instructions as important (n=150)

Response/ Gender	Not important at all (%)	Fairly unimportant (%)	Undecided (%)	Fairly important (%)	Very important (%)	Total (%)
Male	6.2	9.9	9.9	34.6	39.5	100
Female	7.2	2.9	8.7	49.3	31.9	100
Total	6.7	6.7	9.3	41.3	36.0	100

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.393[a]	4	.249
a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 4.60.			
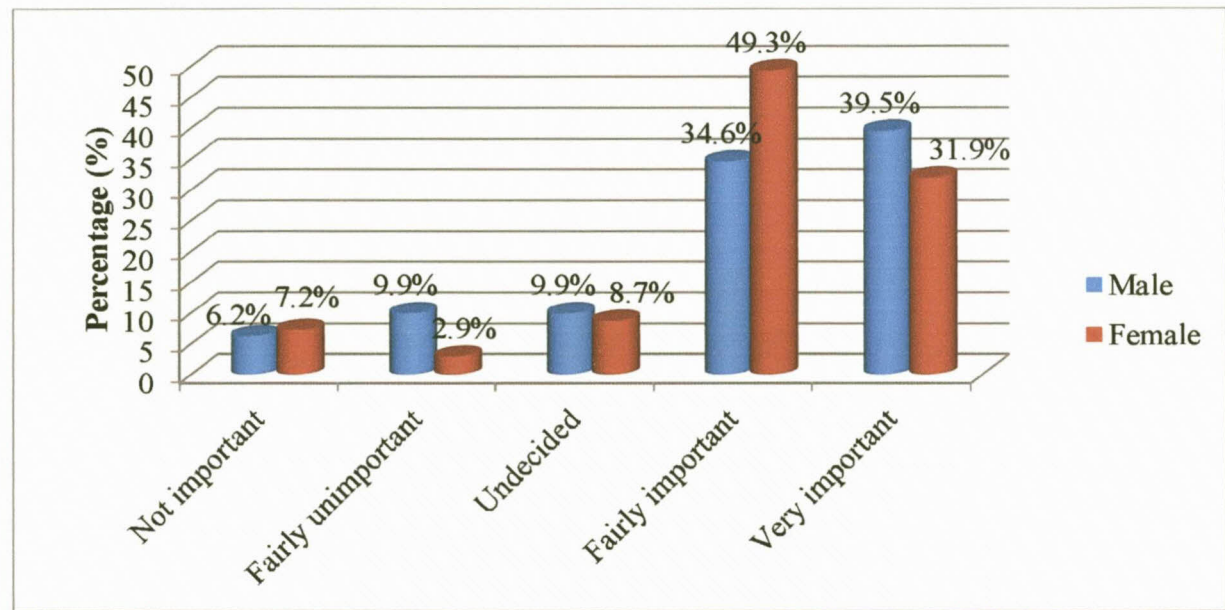
Figure 23: Percentage distribution of respondents perceiving preparation and cooking instructions as important (n=150)

The results in figure 23 showed that 41.3% of the respondents considered preparation/cooking instructions fairly important and 36.6% considered it very important. The male respondents (39.5%) considered it very important while the female respondents (49.3%) considered it fairly important and (31.9%) very important. The male respondents might depend more on these instructions and that might explain why they consider it more important. The results revealed no

significant difference for this question between male and female respondents as indicated by p=0.249.

Question A2.a.2 asked about the importance of brand name.

Table 33: Percentage distribution of respondents perceiving brand name as important (n=149)

Response/ Gender	Not important at all (%)	Fairly unimportant (%)	Undecided (%)	Fairly important (%)	Very important (%)	Total (%)
Male	9.9	7.4	19.8	35.8	27.2	100
Female	13.2	7.4	14.7	38.2	26.5	100
Total	11.4	7.4	17.4	36.9	26.8	100

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.971ª	4	.914

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.02.
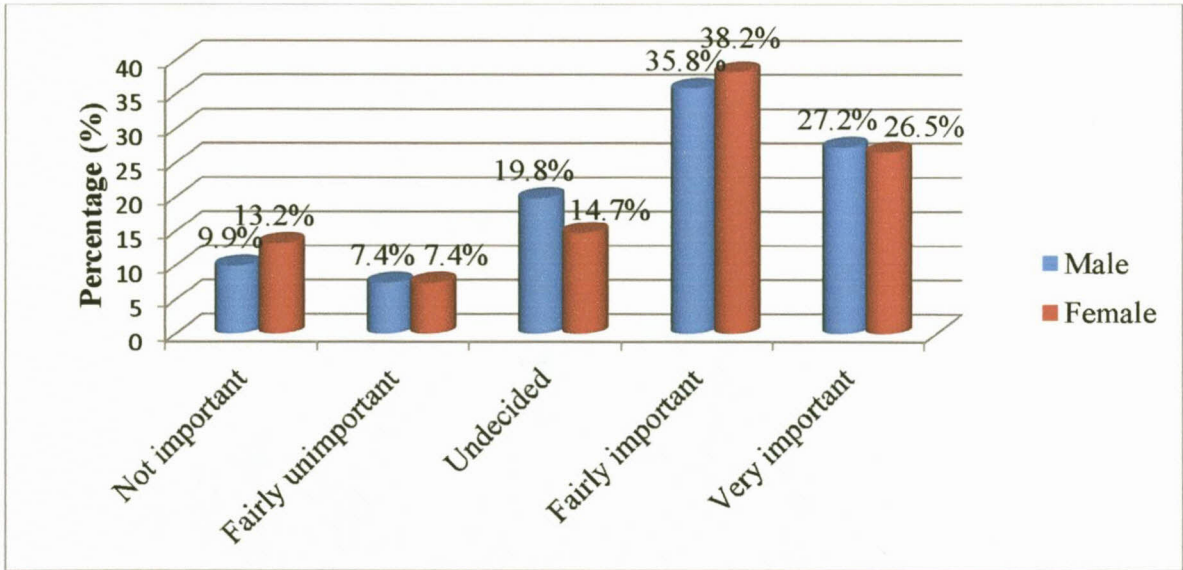
Figure 24: Percentage distribution of respondents perceiving brand name as important (n=149)

The results showed that 36.9% of the respondents (35.8% of the male and 38.2% female) respondents considered brand name as a fairly important attribute. The results also revealed that

26.8% of the respondents perceived the food label attribute as very important (27.2% male and 26.5% female) respondents. This result is supported by Insch and Florek (2009:454) by stating that consumers pay more attention to label aspects such as brand and price than to country of origin where they pay less attention. Furthermore, the results revealed no significant difference between male and female respondents with an indication of p=0.914.

Question A2.a.3 asked respondents whether the product mass or volume would be important.

Table 34: Percentage distribution of respondents perceiving the product mass or volume as important (n=147)

Response/ Gender	Not important at all (%)	Fairly un - important (%)	Undecided (%)	Fairly important (%)	Very important (%)	Total (%)
Male	15.2	7.6	16.5	34.2	26.6	100
Female	4.4	5.9	30.9	36.8	22.1	100
Total	**10.2**	**6.8**	**23.1**	**35.4**	**24.5**	**100**

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.981[a]	4	.092

a. 1 cells (10.0%) have expected count less than 5. The minimum expected count is 4.63.
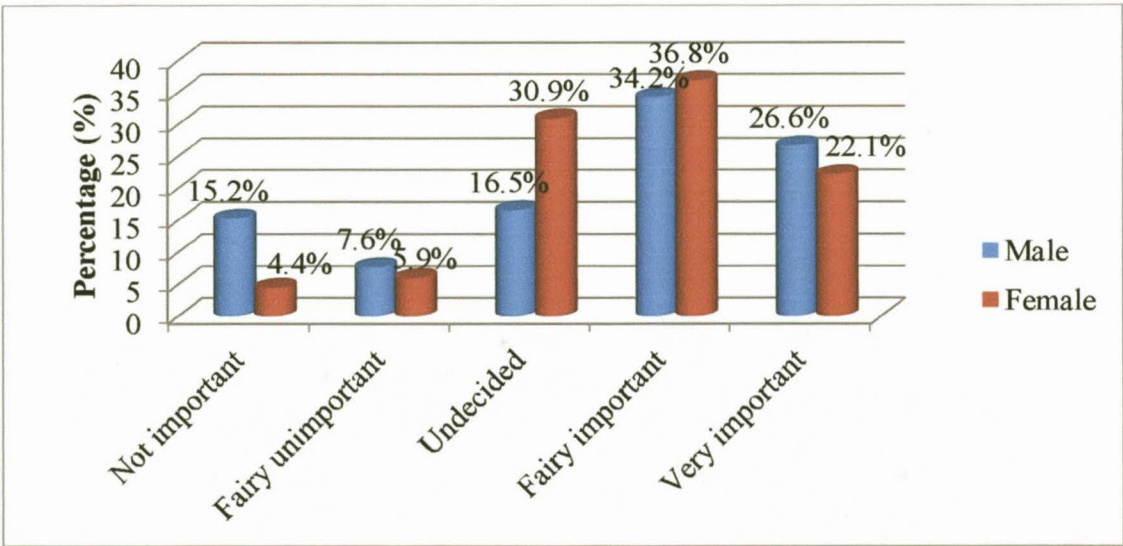
Figure 25: Percentage distribution of respondents perceiving product mass or volume as important (n=147)

The results revealed that 35.4% of the respondents considered product mass or volume as fairly important and 24.5% considered it as very important. As indicated in the results (p=0.092), there is no significant difference between the male and female respondents. More female respondents (30.9%) than male respondents (16.5%) were undecided to whether product mass or volume is important to them while 34.2% male respondent and 36.8% female respondents said it is fairly important. The assumption could be that male and female respondents do value product mass or volume as an important product attribute that they can use during product purchasing.

Question A2.a.4 asked respondents whether the nutrition information is important.

Table 35: Percentage distribution of respondents perceiving the nutrition information as important (n=148)

Response/ Gender	Not important at all (%)	Fairly un-important (%)	Undecided (%)	Fairly important (%)	Very important (%)	Total (%)
Male	7.6	11.4	24.1	27.8	29.1	100
Female	4.3	1.4	18.8	34.8	40.6	100
Total	6.1	6.8	21.6	31.1	34.5	100

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.465[a]	4	.076
a. 3 cells (30.0%) have expected count less than 5. The minimum expected count is 4.20.			
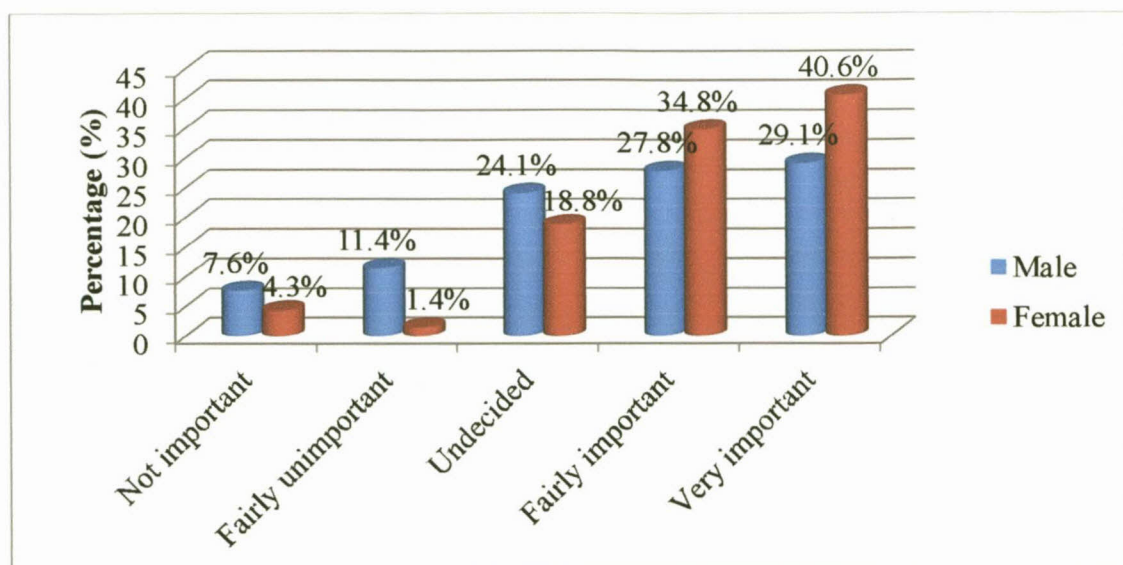
Figure 26: Percentage distribution of respondents perceiving nutrition information as important (n=148)

The results revealed that 34.5% of the respondents answered that is very important another 31.1% answered that it is fairly important. 40.6% of the female respondents considered it very important and 34.8% fairly important while 29.1% male respondents considered it very important and 27.8% fairly important. The majority of respondents consider it important but they do not interpret the information correctly as could be seen in question A1.b8. There is no significant difference between the male and female respondents on this aspect as indicated by p=0.076. The literature concur with this results where more females pay attention to information about calories, vitamins, and minerals and they tend to use both nutrition labels and ingredient lists than males who are more likely to use the ingredient lists (Drichoutis, *et al.*, 2006:3).

Question A2.a.5 asked respondents whether the ingredients list is important to them.

Table 36: Percentage distribution of respondents perceiving the ingredients list as important (n=149)

Response/ Gender	Not important at all (%)	Fairly un-important (%)	Undecided (%)	Fairly important (%)	Very important (%)	Total (%)
Male	8.8	27.5	16.3	22.5	25.0	100
Female	7.2	15.9	18.8	33.3	24.6	100
Total	8.1	22.1	17.4	27.5	24.8	100

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Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.063[a]	4	.398
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.56.			
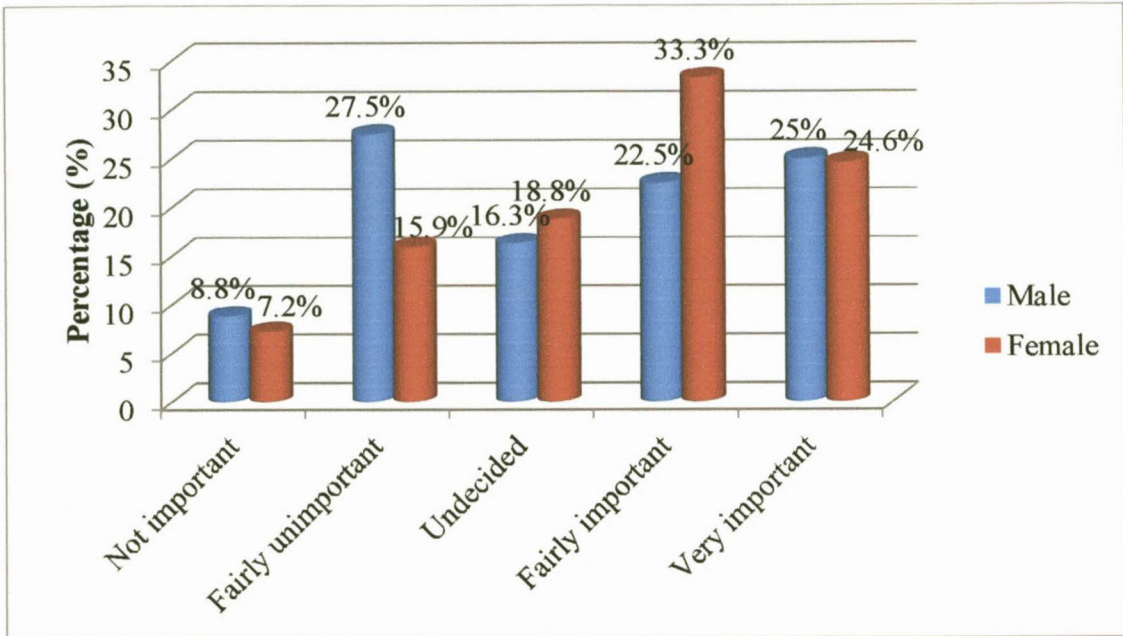
Figure 27: Percentage distribution of respondents perceiving ingredients list as important (n=149)

The results showed that 27.5% of the respondents considered ingredients lists fairly important and 24.8% considered it very important but 22.1% considered it fairly unimportant. The female respondents answered fairly important (33.3%) and very important (24.6%) while the male respondents considered it fairly important (22.5%) and very important (25.0%) but also fairly unimportant (27.5%). This is contradicted by the results of a research done in USA by (Drichoutis, *et al.*, 2006:3) where they found that males are more likely to use the ingredient lists in contrast to females who pay attention to information about calories, vitamins, and minerals and they tend to use both nutrition labels and ingredient lists. Furthermore, ingredients are seen as the most important aspect on food labels (McIlveen and Semple, 2002:82). In this study there is no significant difference with these results between male and female respondents p=0. 398.

Question A2.a.6 asked respondents if the manufacturer name and contact details is important to them.

Table 37: Percentage distribution of respondents perceiving the manufacturer name and contact details as important (n=148)

Response/ Gender	Not important at all (%)	Fairly un-important (%)	Undecided (%)	Fairly important (%)	Very important (%)	Total (%)
Male	21.5	16.5	21.5	31.6	8.9	100
Female	17.4	26.1	20.3	20.3	15.9	100
Total	**19.6**	**20.9**	**20.9**	**26.4**	**12.2**	**100**

| Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.299[a]	4	.258
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.39.			
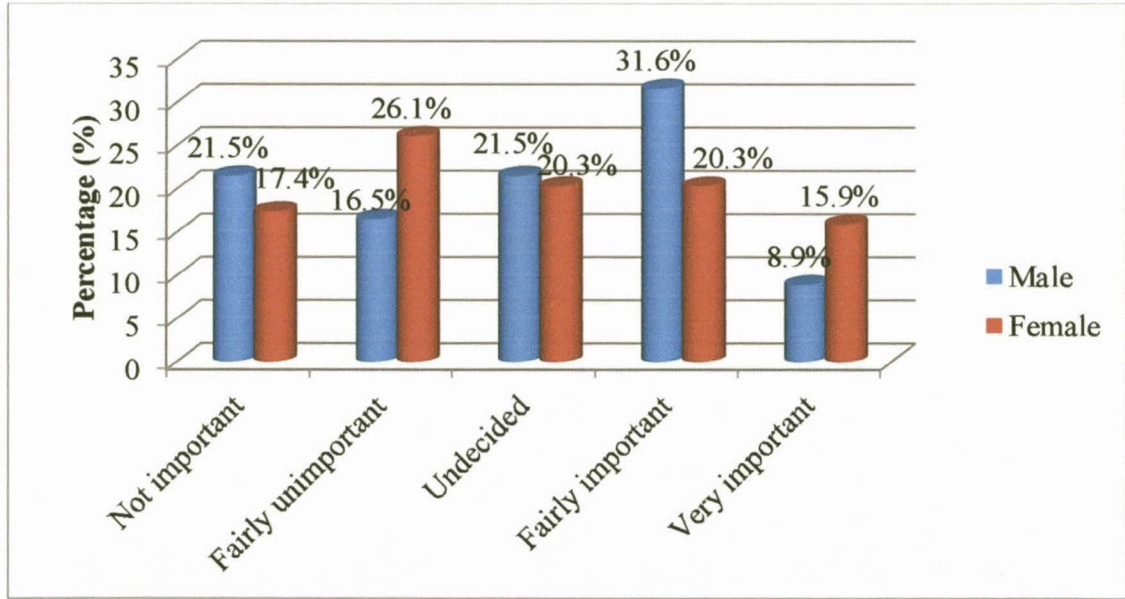
Figure 28: Percentage distribution of respondents perceiving manufacturer name and contact details as important (n=148)

The results showed that 26.4% of the respondents considered manufacturer name and contact details fairly important, 20.9% fairly unimportant and undecided respectively and only 12.2% perceived it as very important. Interestingly, more male respondents (31.6%) said it is fairly

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important to them while 26.1% female respondents said it is fairly unimportant. There is no significant difference with these results between male and female respondents (p=0.258). It could be assumed that the respondents do not value the manufacturer name and contact details on food labels when they purchase products though the new South African food labeling regulations wants the food manufacturers and producers to avail that to the consumers.

Question A2.a.7 asked respondents about the importance of the country of origin.

Table 38: Percentage distribution of respondents perceiving the country of origin as important (n=149)

Response/ Gender	Not important at all (%)	Fairly un-important (%)	Undecided (%)	Fairly important (%)	Very important (%)	Total (%)
Male	17.5	28.7	28.7	11.3	13.8	100
Female	26.1	13.0	26.1	23.2	11.6	100
Total	21.5	21.5	27.5	16.8	12.8	100

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.905[a]	4	.064

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.80.
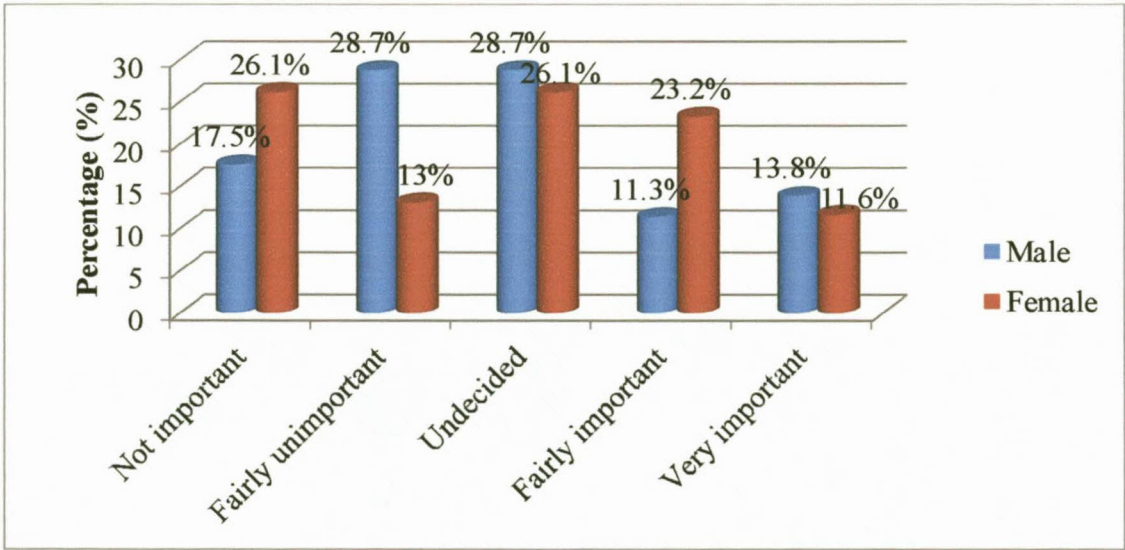
Figure 29: Percentage distribution of respondents perceiving country of origin as important (n=149)

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The results showed that the answer most frequently selected was undecided (27.5%). For the female respondents, it was equally divided between not important at all (26.1%) and undecided (26.1%) as the most frequent response while the male respondents most frequent responses was fairly unimportant (28.7%) and undecided (28.7%). For male respondents (13.8%) and female respondents (11.6%), the very important gets the lowest score. These results are supported by Insch and Florek (2009:454) stating that consumers pay less attention to country of origin than other label aspects. With regard to these results, there is no significant difference between the male and the female respondents as indicated by p=0.064.

Question A2.a.8 asked respondents about the importance of price as an attribute.

Table 39: Percentage distribution of respondents perceiving price as important (n=150)

Response/ Gender	Not important at all (%)	Fairly un-important (%)	Undecided (%)	Fairly important (%)	Very important (%)	Total (%)
Male	4.9	7.4	6.2	18.5	63.0	100
Female	2.9	2.9	10.1	18.8	65.2	100
Total	4.0	5.3	8.0	18.7	64.0	100

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.574[a]	4	.631

a. 4 cells (40.0%) have expected count less than 5. The minimum expected count is 2.76.
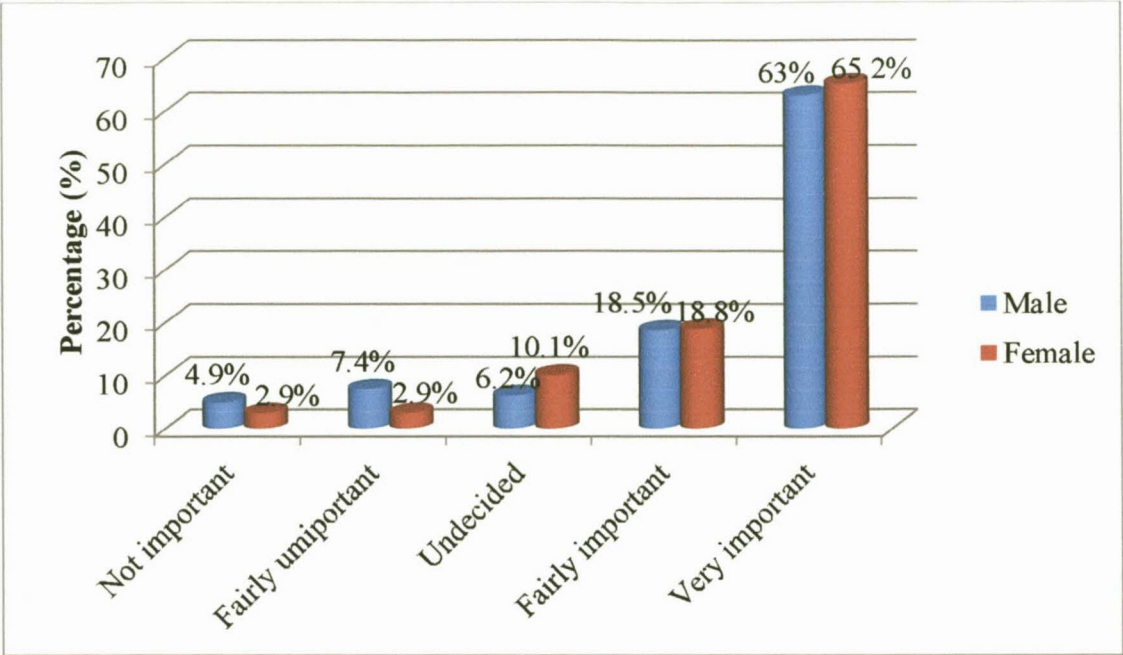
Figure 30: Percentage distribution of respondents perceiving price as important (n=150)

The results showed that a convincing 64% of the respondents considered price a very important attribute and a further 18.7% considered it fairly important. Male and female respondents agreed on the very important response with 63% male and 65.2% female respondents selecting this answer. These results are in agreement with Insch and Florek (2009:454) stating that consumers give more attention to price. With regard to these results, there is no significant difference between the male and the female respondents as indicated by p=0.631.

Question A2.a.9 asked respondents about the importance of additives and artificial colours as food label attributes.

Table 40: Percentage distribution of respondents perceiving additives and artificial colours as important (n=149)

Response/ Gender	Not important at all (%)	Fairly un-important (%)	Undecided (%)	Fairly important (%)	Very important (%)	Total (%)
Male	13.8	21.3	26.3	21.3	17.5	100
Female	7.2	11.6	26.1	26.1	29.0	100
Total	10.7	16.8	26.2	23.5	22.8	100

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.029ª	4	.197

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.41.
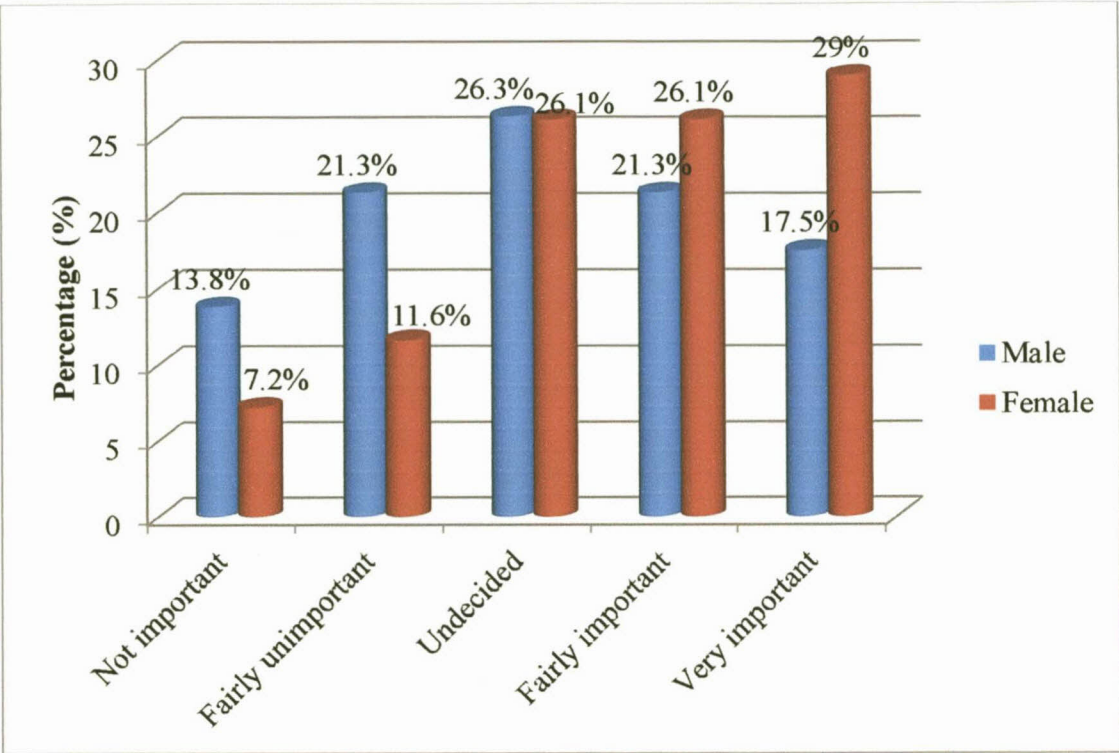
Figure 31: Percentage distribution of respondents perceiving additives and artificial colours listing as important (n=149)

The results indicated that the undecided answer was selected most often (26.2%) and fairly important (23.5%) were also selected often. Interestingly, though that an equal number of male respondents selected fairly unimportant (21.3%) and fairly important (21.3%) on this question while female respondents selected undecided (26.1%) and fairly important (26.1%). The results revealed no significant difference between the male and female respondents as indicated by p=0.197.

Question A2.a.10 asked the respondents on the importance of the date mark.

Table 41: Percentage distribution of respondents perceiving the date mark as important (n=148)

Response/ Gender	Not important at all (%)	Fairly un-important (%)	Undecided (%)	Fairly important (%)	Very important (%)	Total (%)
Male	7.6	1.3	10.1	13.9	67.1	**100**
Female	1.4	2.9	2.9	5.8	87.0	**100**
Total	**4.7**	**2.0**	**6.8**	**10.1**	**76.4**	**100**

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.578ᵃ	4	.032

a. 5 cells (50.0%) have expected count less than 5. The minimum expected count is 1.40.
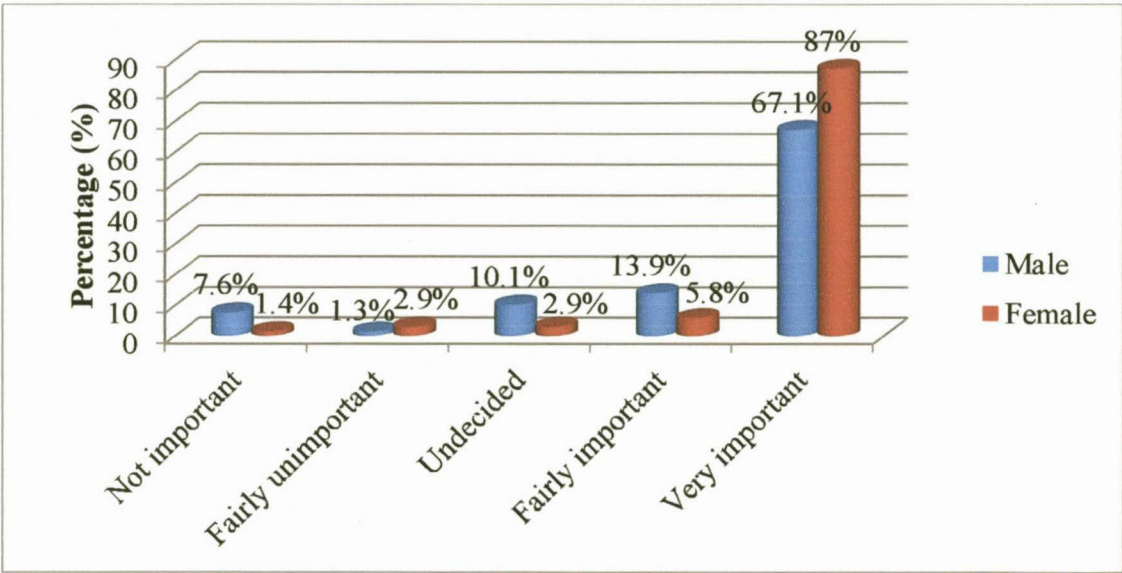
Figure 32: Percentage distribution of respondents perceiving date mark as important (n=148)

The results showed a prominent 76.4% of the respondents answered that date mark is very important to them; female respondents gave even higher priority to this answer with 87% than male respondents (67.1%). According to Verbeke and Ward (2002:82), expiry date was seen as the most important label aspect since they use it as a guarantee of the freshness of the product. Similarly, Sanlier and Karakus (2010:144) stated that consumers look at expiry date of the product with the aim of buying products that are fresh. The results of this study showed a

significant difference (p=0.032) between the male and female respondents with regard to this question.

Question A2.a.11 asked the respondents how important the environmental information is to them.

Table 42: Percentage distribution of respondents perceiving the environmental information as important (n=149)

Response/ Gender	Not important at all (%)	Fairly un-important (%)	Undecided (%)	Fairly important (%)	Very important (%)	Total (%)
Male	16.0	19.8	16.0	27.2	21.0	**100**
Female	10.3	10.3	35.3	29.4	14.7	**100**
Total	**13.4**	**15.4**	**24.8**	**28.2**	**18.1**	**100**

| Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.440ᵃ	4	.051
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.13.			
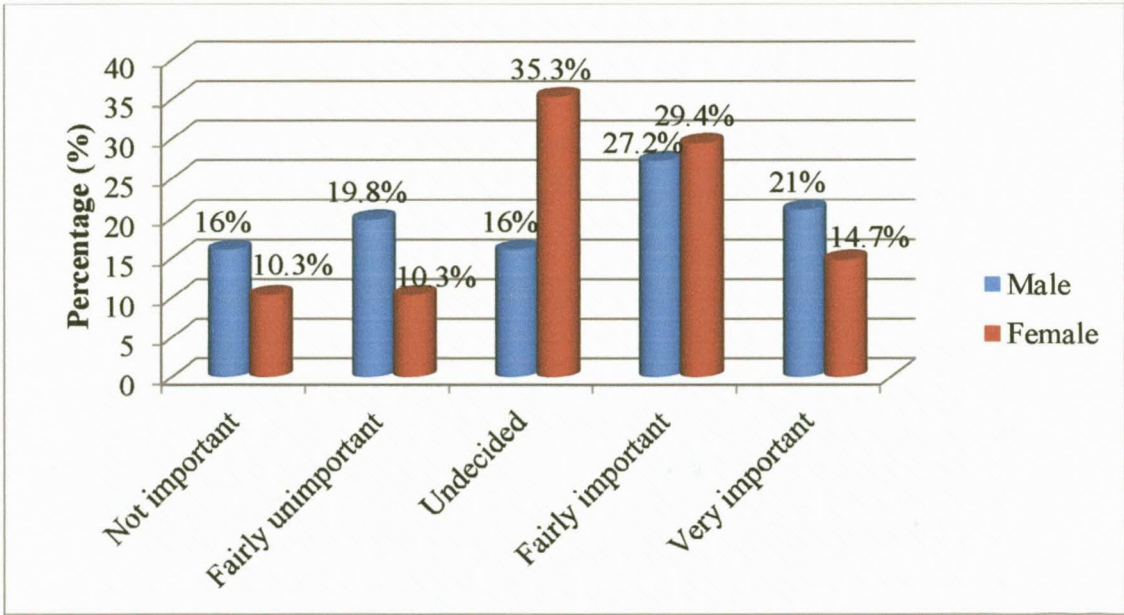
Figure 33: Percentage distribution of respondents perceiving environmental information as important (n=149)

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The results showed the most frequent response as fairly important (28.2%) and undecided (24.8%) on perceiving environmental information as important. The male respondents selected fairly important (27.2%) most often while 35.3% of the female respondents were undecided in this issue and 29.4% see it as fairly important. It seems that the male respondents were more concerned about environmental issues, but these results revealed no significant difference between the male and female respondents as indicated by p=0.051.

Question A2.a.12 asked about the importance of storage instructions.

Table 43: Percentage distribution of respondents perceiving storage instructions as important (n=150)

Response/ Gender	Not important at all (%)	Fairly un-important (%)	Undecided (%)	Fairly important (%)	Very important (%)	Total (%)
Male	6.2	6.2	16.0	32.1	39.5	100
Female	4.3	2.9	5.8	53.6	33.3	100
Total	5.3	4.7	11.3	42.0	36.7	100

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.042^a	4	.060
a. 4 cells (40.0%) have expected count less than 5. The minimum expected count is 3.22.			
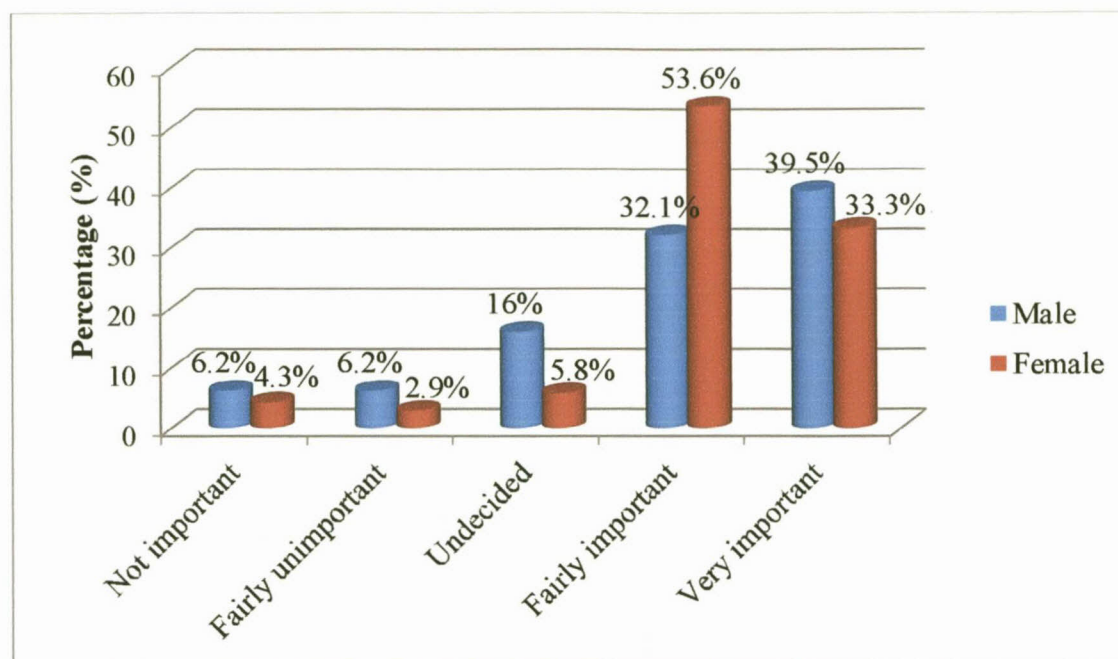
Figure 34: Percentage distribution of respondents perceiving storage instructions as important (n=150)

The results showed the most frequent response was fairly important (42.0%) and a further 36.7% answered that storage instructions are very important to them. More female respondents (53.6%) revealed that they perceive storage instructions fairly important than male respondents (32.1%) while on the other hand, more male respondents (39.5%) said the storage instructions are very important to them than female respondents (33.3%). This results concur with Cheftel, (2005:536) when stating that, consumers often wish that food labels must indicate the durability date after opening the food package as well as the recommended storage conditions. The results revealed though no significant difference between the male and female respondents with regard to this question as indicated by p=0.060.

4.7 THE USE OF COMMON FOOD LABEL INFORMATION

The A2.b questions were asked to determine whether the importance of the food label information required differs between different food products.

Question A2.b.1 asked the respondents to indicate which food label information they look for when purchasing dairy products.

Table 44: Percentage distribution of respondents' use of different food label information on dairy products (n=137).

Response/ Gender	Use-by-date (%)	Kilojoules (%)	Additives (%)	Ingredients list (%)	Nutrient balance (%)	Allergens	Total (%)
Male	65.3	5.3	1.3	8.0	18.7	1.3	**100**
Female	82.3	3.2	3.2	3.2	4.8	3.2	**100**
Total	**73.0**	**4.4**	**2.2**	**5.8**	**12.4**	**2.2**	**100**

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.342[a]	5	.096

a. 8 cells (66.7%) have expected count less than 5. The minimum expected count is 1.36.
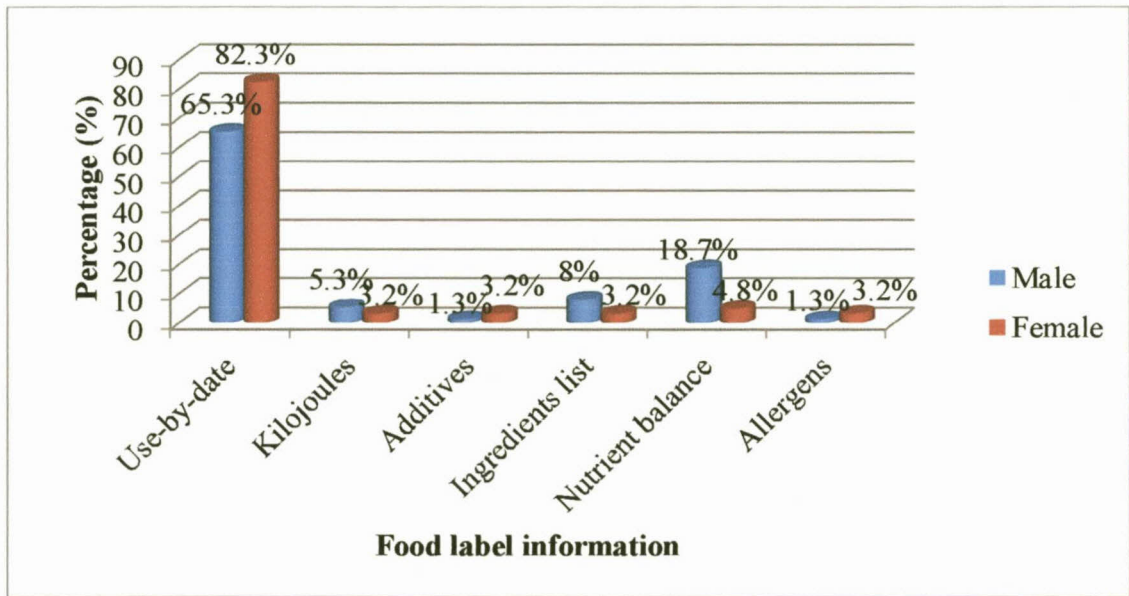
Figure 35: Respondents' percentage distribution on the importance of label information on dairy products (n=137)

The results of figure 33 showed that 73% of the respondents indicated that the use-by-date is considered to be the most important information on dairy products. The female respondents (82.3%) considered it even more important than the male respondents (65.3%). The short shelf life of dairy products and the importance of dairy products in the diet would explain this response. Interestingly, that 18.7% of the male respondents consider the information on the

nutrition balance very important as well. The results does not show any significant difference between male and female respondents as indicated by p=0.096

Question A2.b.2 asked the respondents to indicate which food label information they look for when purchasing canned foods.

Table 45: Percentage distribution of respondents' use of different food label information on canned foods (n=133)

Response/ Gender	Use-by-date (%)	Kilojoules (%)	Additives (%)	Ingredients list (%)	Nutrient balance (%)	Allergens	Total (%)
Male	53.4	5.5	6.8	15.1	9.6	9.6	**100**
Female	41.7	11.7	8.3	18.3	5.0	15.0	**100**
Total	**48.1**	**8.3**	**7.5**	**16.5**	**7.5**	**12.0**	**100**

NB: No statistical information
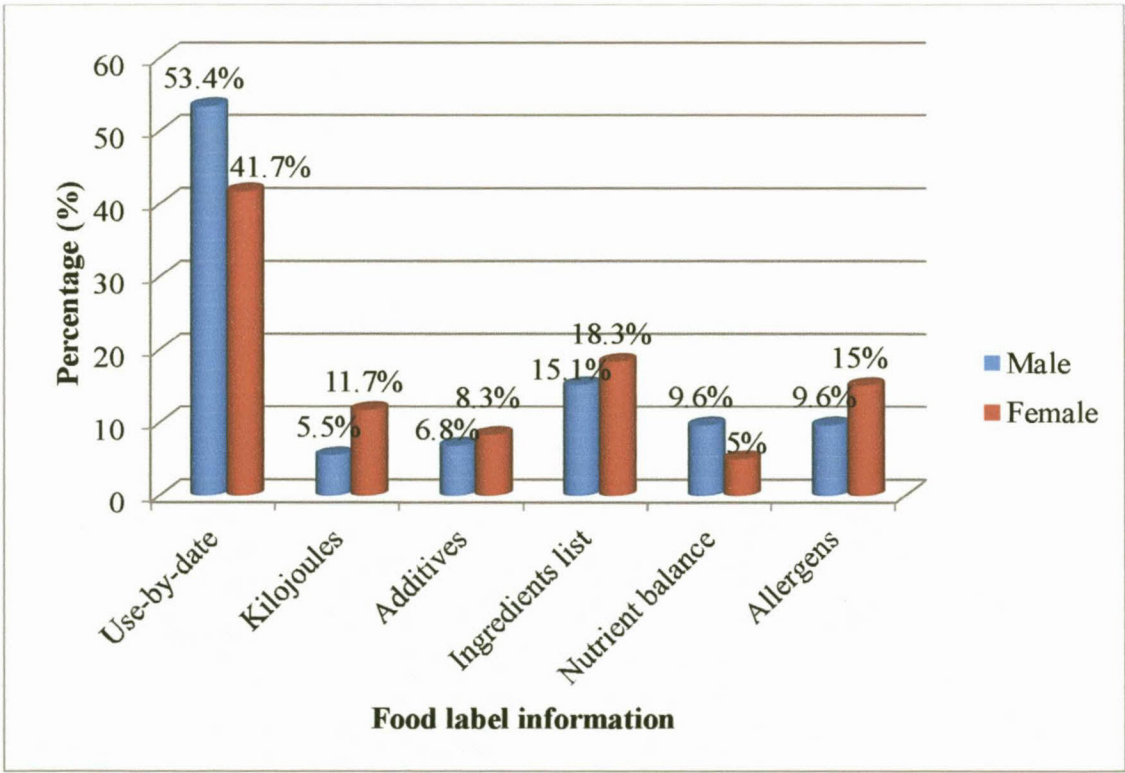
Figure 36: Respondents' percentage distribution of the most important label information on canned foods (n=133)

The results of figure 34 showed that 48.1% considered the use-by-date as very important when purchasing canned foods. More male respondents (53.4%) than female respondents (41.7%) considered it important. The ingredients list took second place (16.5%) of the total group with 18.3% female and 15.1% male respondents. It is interesting that 15% of the female respondents were concerned about possible allergens while none of the male respondents were. Another interesting and expected result is that the female respondents were more concerned about the kilojoules content of a canned product.

Question A2.b.3 asked the respondents to indicate which food label information they look for when purchasing frozen foods.

Table 46: Percentage distribution of respondents' use of different food label information on frozen foods (n=135)

Response/ Gender	Use-by-date (%)	Kilojoules (%)	Additives (%)	Ingredients list (%)	Nutrient balance (%)	Allergens	Total (%)
Male	51.4	6.8	18.9	6.8	14.9	1.4	100
Female	41.0	9.8	9.8	11.5	26.2	1.6	100
Total	46.7	8.1	14.8	8.9	20.0	1.5	100

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.037[a]	5	.303

a. 3 cells (25.0%) have expected count less than 5. The minimum expected count is .90.
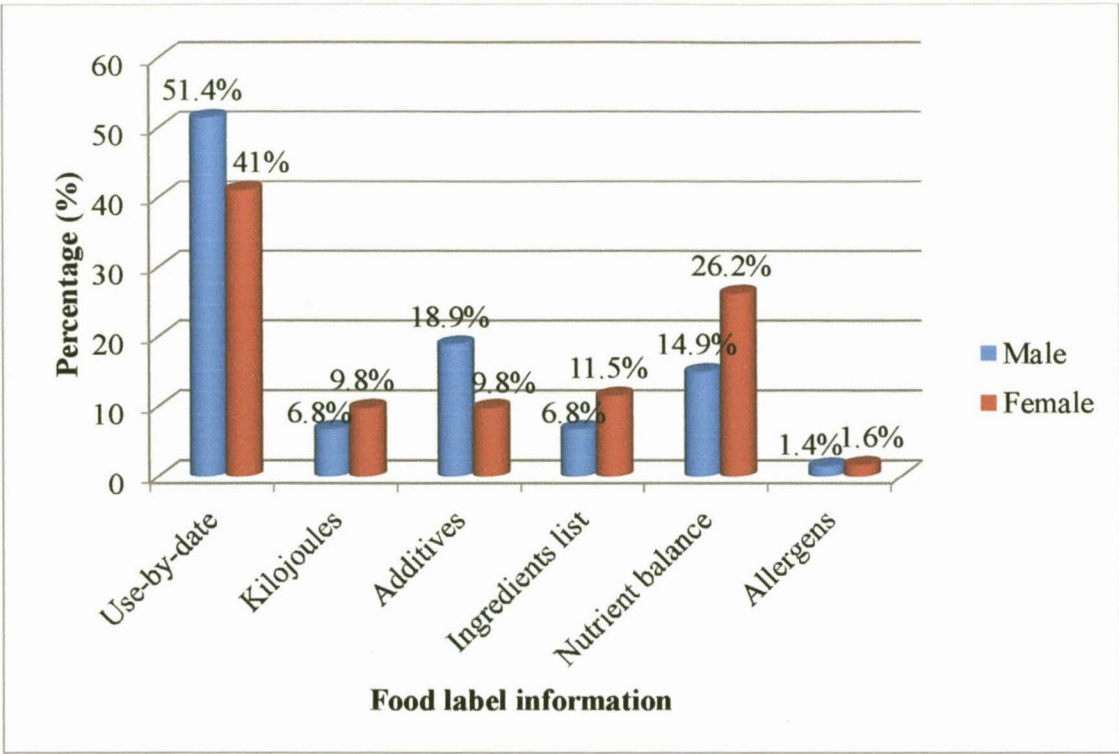
Figure 37: Respondents' percentage distribution of the most important label information on frozen foods (n=135)

The results show that 46.7% of the total group of respondents indicated the use-by-date as the most important piece of information on frozen foods that consisted of 51.4% of the male respondents and 41.0% of the female respondents. The results revealed no significant difference between the male and female respondents with regard to the importance of different food label information on frozen foods as indicated by p=0.303.

Question A2.b.4 asked the respondents to indicate which food label information they look for when purchasing meat and fish.

Table 47: Percentage distribution of respondents' use of different food label information on meat and fish (n=139)

Response/ Gender	Use-by-date (%)	Kilojoules (%)	Additives (%)	Ingredients list (%)	Nutrient balance (%)	Allergens	Total (%)
Male	51.4	14.9	8.1	6.8	14.9	4.1	100
Female	66.2	6.2	4.6	4.6	16.9	1.5	100
Total	58.3	10.8	6.5	5.8	15.8	2.9	100

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.516ᵃ	5	.356

a. 6 cells (50.0%) have expected count less than 5. The minimum expected count is 1.87.
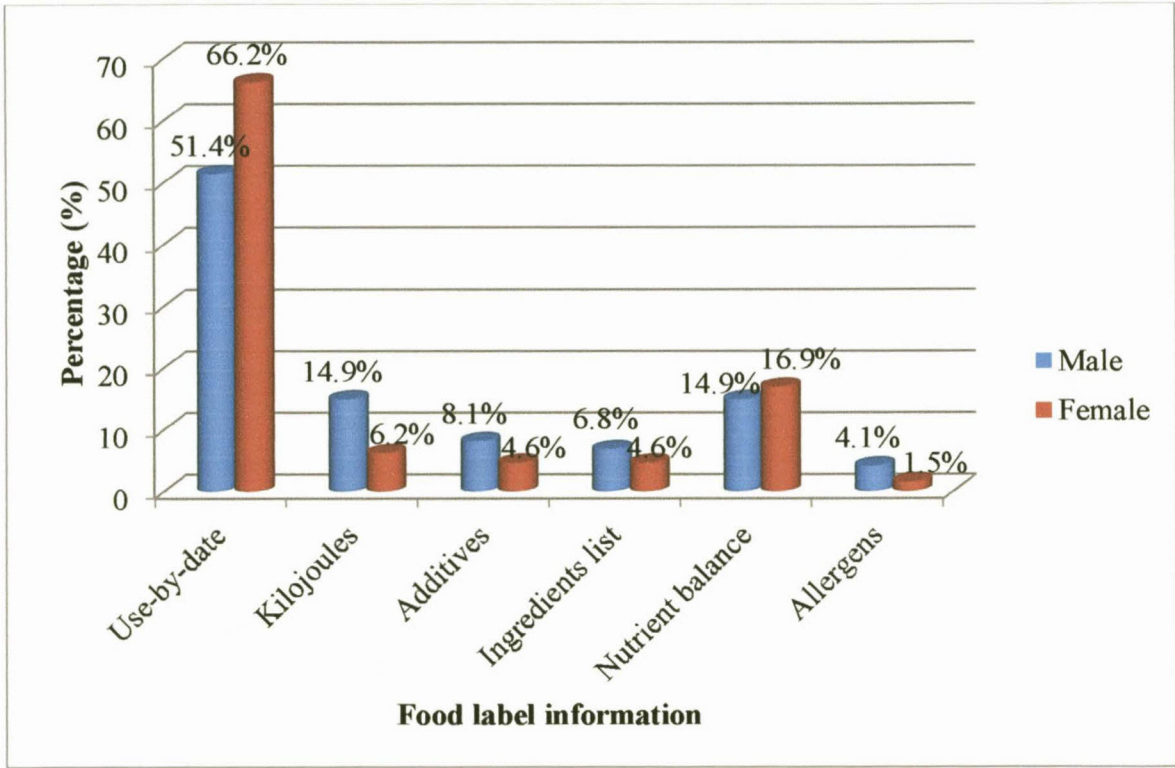
Figure 38: Respondents' percentage distribution of the most important label information on meat and fish (n=139)

The results indicated that 58.3% of the total group considered the use-by date the most important on meat and fish products. More female respondents (66.2%) see it as important while 51.4% of the male respondents considered it important. This result is supported by Verbeke and Ward (2006:464) when they said that more respondents categorised the expiry date as the most important information they look for on meat product. There is no significant difference on these results between male and female respondents as indicated by p=0.356.

Question A2.b.5 asked the respondents to indicate which food label information they look for when purchasing ready-made meals.

Table 48: Percentage distribution of respondents' use of different food label information on ready-made meals (n=136)

Response/ Gender	Use-by-date (%)	Kilojoules (%)	Additives (%)	Ingredients list (%)	Nutrient balance (%)	Allergens	Total (%)
Male	35.6	8.2	4.1	24.7	16.4	11.0	**100**
Female	33.3	23.8	7.9	19.0	9.5	6.3	**100**
Total	**34.6**	**15.4**	**5.9**	**22.1**	**13.2**	**8.8**	**100**

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.734^a	5	.120
a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 3.71.			
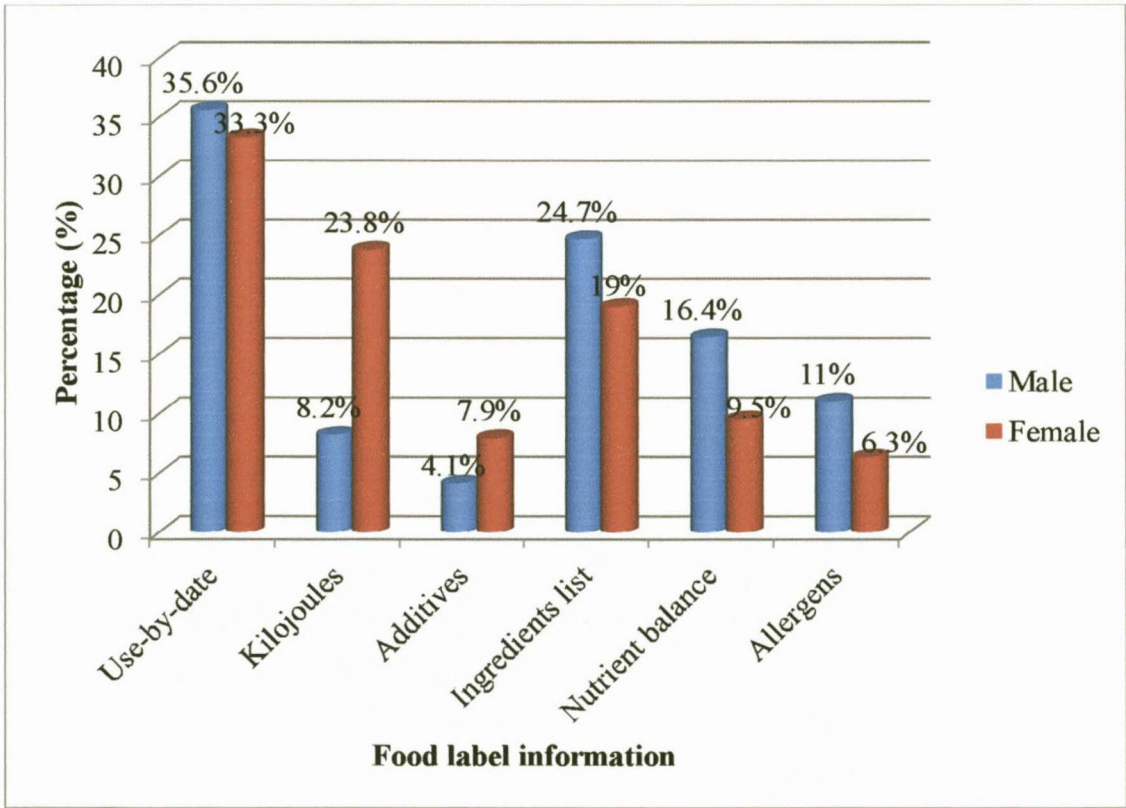
Figure 39: Respondents' percentage distribution of the most important label information on ready-made meals (n=136)

The results revealed that the respondents considered the use-by-date on ready-made products as the most important with 34.6% of the total selecting it with very little difference between the male (35.6%) and female (33.3%) respondents. The second most important information on ready-made meals for the male respondents were the ingredient list (24.7%) while the second most important information for the female respondents were the kilojoules content (23.8%). There is no significant difference on these results between male and female respondents as indicated by p=0.120. These results coincide with those of Tesseir, *et al.* (2000:38) who stated that, the respondents indicated that they look for use-by-date as the most important label information on ready-made foods. The assumption could be that, consumers are more concerned with the freshness of the food hence perceive use-by-date as important.

Question A2.b.6 asked the respondents to indicate which food label information they look for when purchasing biscuits.

Table 49: Percentage distribution of respondents' use of different food label information on biscuits (n=135)

Response/ Gender	Use-by-date (%)	Kilojoules (%)	Additives (%)	Ingredients list (%)	Nutrient balance (%)	Allergens	Total (%)
Male	36.1	12.5	6.9	22.2	19.4	2.8	100
Female	15.9	41.3	9.5	14.3	12.7	6.3	100
Total	26.7	25.9	8.1	18.5	16.3	4.4	100

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.208[a]	5	.002

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 2.80.
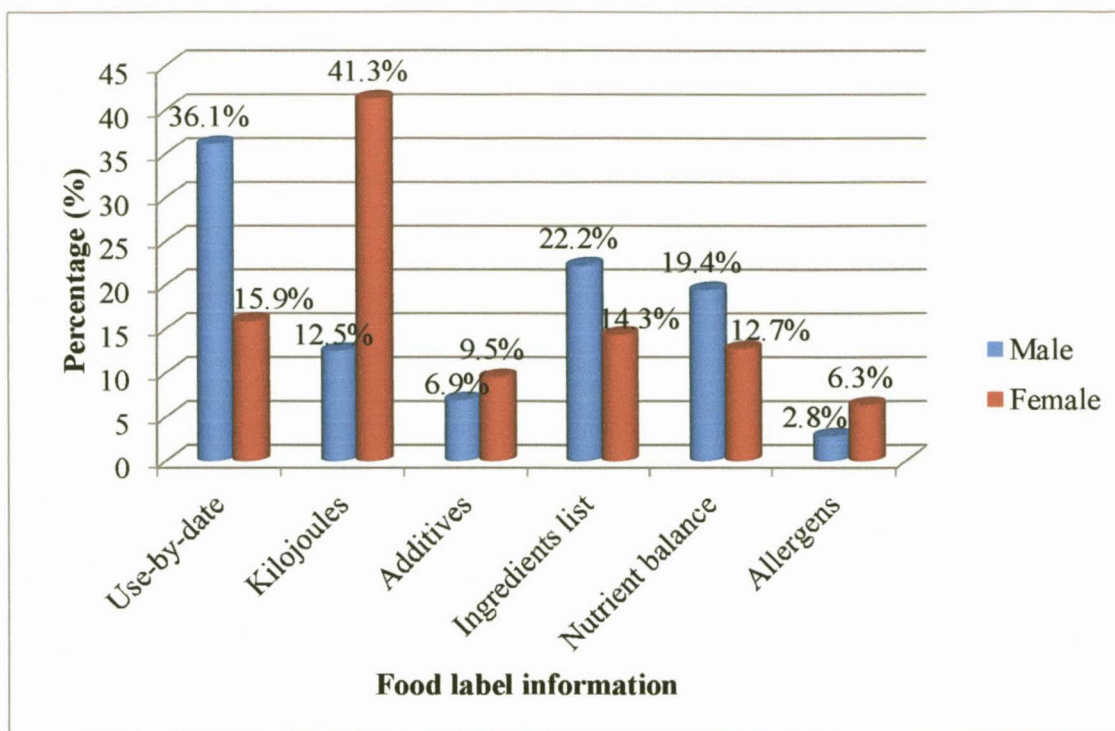
Figure 40: Respondents' percentage distribution of the most important label information on biscuits (n=135)

The results indicated that use-by-date (26.7%) and kilojoules (25.9%) were the most important aspects of information for the whole group. The female respondents (41.3%) considered the kilojoules information the most important while only 15.9% considered the use-by-date as important. The male respondents (36.1%) considered the use-by-date important while only 12.5% considered the kilojoules information important, but 22.2% of them considered the list of ingredients the most important. The high percentage of female respondents considering kilojoules content as the most important information on the label of biscuits should most probably be seen as an indication of the females' awareness of body weight. This differs with Tesseir, *et al.* (2000:38) who said that, respondents indicated that they perceived use-by-date as important on biscuits products. Indicated by (p=0.002), there is a significant difference in male and female respondents' perception of the importance of food label information on biscuits.

From the results of this group of questions, it is clear that the use-by-date is considered the most important aspect of the labeling although it is not equally important for most food products.

4.8 SOURCES OF FOOD LABEL INFORMATION

Question A2.c asked the respondents to indicate whether a specific source provided them with understandable food label information. The respondents' reactions to this question are shown in table 50.

Table 50: Percentage distribution of respondents' use of different source of food label information (n=152)

Source of information		Yes (%)	No (%)	Male		Female		Pearson Chi-Square value
				Yes (%)	No (%)	Yes (%)	No (%)	
1	Television	80	20	82.7	17.3	76.8	23.2	0.368
2	Radio	51	49	56.3	43.8	44.9	55.1	0.168
3	Friends/University mates	67.1	32.9	65.4	34.6	69.1	30.9	0.633
4	Magazines	84.6	15.4	82.5	17.5	87	13	0.453
5	Newspaper	54.4	45.6	60	40	47.8	52.2	0.137
6	Health club, gym, etc	70.5	29.5	63.7	36.3	78.3	21.7	0.053
7	Doctor	77	23	72.2	27.8	82.6	17.4	0.131
8	Pharmacist	64.6	35.4	66.7	33.3	62.3	37.7	0.582
9	In-store information	65.5	34.5	60.8	39.2	71	29	0.190
10	Internet	51.7	48.3	42.5	57.5	62.3	37.7	0.016
11	Books/leaflets	74.8	25.2	71.8	28.2	78.3	21.7	0.367
12	Parents/other relatives	74.1	25.9	75.6	24.4	72.5	27.5	0.667
13	School subjects	58.4	41.6	55	45	62.3	37.7	0.366
14	Study material/coursework	56.8	43.2	55.7	44.5	58	42	0.078

The results from the total group showed that magazines (84.6%), television (80%), the doctor (77%), books or leaflets (74.8%) and parents or other relatives (74.1%) are considered the most used source of information. The male respondents indicated television (82.7%), magazines (82.5%), parents or other relatives (75.6%), the doctor (72.2%) and books or leaflets (71.8%) thus the same sources but in a different order. The female respondents indicated magazines (87%), the doctor (82.6%), books or leaflets (78.3%), the health club or gym (78.3%), television (76.8%) as the most important sources of information. Interesting to note that the health club or gym was considered an important source for information by the female respondents while it did not had a prominent position under the male respondents. The only source of information on which there was a significant difference between the male and female respondents with a p=0.016 value was the internet with 42.5% male respondents opposed to 62.3% female respondents that considered it a source of information.

Another very interesting result is that the parents or relatives did not emerge as one of the top 5 sources of information on the female respondents list. These results concur with that of Van Dillen, *et al.*, (2003:1068s), who revealed that, relatives and magazines are often used as sources of label information. The assumption of these results is that respondents are more concerned with what they eat in order to maintain healthy bodies. The results are also substantiated when it is mentioned that mass media is considered as the most vital source of information with regard to food quality and safety (Pieniak, *et al.*, 2007:1050).

The two sources that scored the lowest figure as sources of information for food label information were the internet (51.7%) and the radio (51%). The internet was a disappointing result in a time where all the university students have access to the internet. The internet actually more often gets a negative answer from the male respondents with only 42.5% indicating it as a source of food label information. The female students used the internet more often and they rated the newspaper much lower (47.8%). This result contradict with that of Van Dillen, *et al.*, (2003:1068s) that stipulate that, the internet was perceived as the most important source of information among the youth. Therefore, according to this result, the respondents seemed not to consider the internet as the most source of information. Even though it is suppositional that the university students have access to the internet and they must be able to browse them for any information they deem necessary such as food labels since they are assumed to be concerned with their health. The prominent position of magazines and the television can be utilized to convey information and it also emphasizes the importance of responsible and honest reporting by journalists and advertisers.

4.9 PRODUCT EVALUATION ACCORDING TO THE SOUTH AFRICAN NEW FOOD LABELING REGULATIONS

It is clear from table 51 that the majority of the products are labeled according to the new South African food labeling regulations with a few exceptions. The new South African food labeling regulations were passed in 01 March, 2010 to effect in 01 March, 2011. According to Ali and Kapoor (2009:725), consumers demand detailed, accurate and accessible information on food labels that shows nutritional content, ingredients and health claims, production and expiry dates, storage and cooking instructions. Therefore, products manufactured and imported to South

Africa must be labeled according to the new South African food labeling regulations. The new regulations stipulated that the food label must have all the necessary information to inform and avoid misleading the consumers. Food labels must be in English language and where possible in at least one other South African official language where the label must be clearly visible, legible and permanently attached to the packaging material (GNR 146, 2010:15).

The results of table 51 revealed that almost all of the sampled products were labeled in the English language with accordance to the new South African food labeling regulations. In the selected sample of products there was a brand of spaghetti and macaroni that did not have the descriptive or qualifying words, the rest of the products had.

On the listing of the ingredients, the new South African labeling regulations stated that the ingredients must be labeled in a descending order with the heaviest mass or volume listed first (GNR 146, 2010:20) and this was evident with those products that had the list of ingredients. But products with only one single ingredient used as the main name of the product does not need to have a list of ingredients and these were products such as milk, maize meal as well as fresh produce such as apples, pears, tomatoes and carrots (GNR 146, 2010:20).

A number of the selected samples did not carry an expiry/best before date. The purchased sample of fresh chicken, pears, maize meal and bread did not carry a best before date. It is alarming that a product like chicken did not have a best before date as it is a product with a relative short shelf life. This is not in accordance with the new South African food labeling regulations that stipulated that, 'best before, 'use by' or 'sell by' date must appear on labels preceding the date according to different products and the date must be numerically written in order of 'Day-Month-Year' and only 'best before' be abbreviated as 'BB' (GNR 146, 2010:17-18). For those sampled products that do not have the expiry or best before date are some of the examples of products that the new South African food labeling regulations exempt, such as fresh fruits like pears which have not been peeled or cut and ready-to-eat flour confectionary like bread (GNR 146, 2010:48). The results also revealed that, almost all of the products did not have the date of manufacture with the exception of rice and biscuits. The new South African food labeling regulations exempted the biscuits as the ready-to-eat flour confectionary that must not have the manufacture

date provided the date of manufacture is indicated on the label or in the vicinity when displayed (GNR 146, 2010:48).

Only fish fingers, corned beef, chicken spice, juice and powdered soup had the instructions for use but from the fruits and vegetable category, only carrot did not have. Although the new South African food labeling regulations emphasized that the food manufacturer must specify instructions for use on products (GNR 146, 2010:17) but they are still those food manufacturers who do not comply with the regulations.

The prawns, apples, crushed garlic, salt, chicken spice and baking powder did not have the nutritional and health claims. According to the new South African food labeling regulations, nutritional information is mandatory especially when claims are made but the nutritional and health claims appearing on labels are voluntary (GNR 146, 2010:30) and products such as spices, fresh fruits, etc. are excluded on the labeling of the products with the nutritional and health claims.

Table 51: Product evaluation for correct labelling according to the new South African food labelling regulations

PRODUCT	1.	2. LABELED IN ENGLISH LANGUAGE	3. LABEL CLEARLY, VISIBLE AND LEGIBLE	4. LABEL PRINTED ON CONTRASTING BACKGROUND	5. NAME AND ADDRESS OF THE MANUFACTURER, PRODUCER, PROPRIETOR OR CONTROLLING COMPANY	6. PRODUCT NAME	7. DESCRIPTIVE / QUALIFYING WORDS	8. LIST OF INGREDIENTS	9. PICTORIAL REPRESENTATION	10. NET MASS DECLARATION	11. STORAGE INSTRUCTIONS	12. DATE OF MANUFACTURE	13. COUNTRY OF ORIGIN	14. EXPIRY/ BEST BEFORE / USE BY DATE	15. INSTRUCTIONS FOR USE	16. PRINTED LABELS ON PACKAGE OR OVERWRAP COVERING	17. NUTRITIONAL AND HEALTH CLAIMS	18. LIST OF ADDITIVES / ALLERGENS
DAIRY																		
Milk	1	√	√	√	√	√	√	X	√	√	√	X	√	√	X	√	√	X
Margarine	2	√	√	√		√	√	√	√	√	X	X	√	√	X	√	√	X
Sour milk	3	√	√	√	√	√	√	√	√	√	√	X	√	√	X	√	√	X
Cheese	4	√	√	√	√	√	√	√	√	√	√	X	√	√	X	√	√	√
Yoghurt	5	√	√	√	√	√	√	√	√	√	√	X	√	√	X	√	√	√
Yogi sip	6	√	√	√	√	√	√	√	√	√	√	X	√	√	X	√	√	√
Butter	7	√	√	√	√	√	√	√	√	√	√	X	√	√	√	√	√	√
MEATS AND FISH																		
Chicken	8	√	√	√	√	√	√	√	√	√	√	X	√	X	√	√	√	X
Chicken Vienna	9	√	√	√	√	√	√	√	√	√	√	X	√	√	X	√	√	√
Canned fish	10	√	√	√	√	√	√	√	√	√	X	X	√	√	X	√	√	X
Fish fingers	11	√	√	√	√	√	√	√	√	√	√	X	√	√	√	√	√	√
Prawns	12	√	√	√	√	√	√	√	√	√	X	X	√	√	X	√	X	X
Tuna	13	√	√	√	√	√	√	√	X	√	√	X	√	√	X	√	√	√
Corned beef	14	√	√	√	√	√	√	√	√	√	√	X	√	√	√	√	√	√
FRUITS AND VEGETABLES																		
Apples	15	√	√	√	√	√	√	X	X	√	√	X	√	√	√	√	X	X
Pears	16	√	√	√	√	√	√	X	X	√	X	X	√	X	√	√	√	X
Tomatoes	17	√	√	√	√	√	√	X	X	√	X	X	√	√	√	√	√	X
Carrots	18	√	√	√	√	√	√	X	X	√	X	X	√	√	X	√	√	X
Canned fruits	19	√	√	√	√	√	√	√	√	√	√	X	√	√	√	√	√	X
Crushed garlic	20	√	√	√	√	√	√	√	√	√	√	X	√	√	√	√	X	X
Frozen Mixed vegetables	21	√	√	√	√	√	√	√	√	√	√	X	√	√	√	√	√	X
CEREALS																		
Maize meal	22	√	√	√	√	√	√	X	√	√	X	X	√	X	√	√	√	X
Rice	23	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	X
Spaghetti	24	√	√	√	√	√	X	√	√	√	√	X	√	√	√	√	√	√
Macaroni	25	√	√	√	√	√	X	√	√	√	√	X	√	√	√	√	√	√
Flour	26	√	√	√	√	√	√	√	√	√	X	X	√	√	√	√	√	√
Oats meal	27	√	√	√	√	√	√	√	√	√	√	X	√	√	√	√	√	√
Bread	28	√	√	√	√	√	√	√	X	√	√	X	√	X	X	√	√	√
OTHERS																		
Juice	29	√	√	√	√	√	√	√	√	√	√	X	√	√	√	√	√	√
Biscuits	30	√	√	√	√	√	√	√	√	√	X	√	√	√	X	√	√	√
Salt	31	√	√	√	√	√	√	√	√	√	X	X	√	√	X	√	X	X
Chicken Spice	32	√	√	√	√	√	√	√	√	√	X	X	√	√	√	√	X	√
Cooking oil	33	√	√	√	√	√	√	√	√	√	√	X	√	√	X	√	√	X
Powdered soup	34	√	√	√	√	√	√	√	√	√	X	X	√	√	√	√	√	√
Baking powder	35	√	√	√	√	√	√	√	√	√	X	X	√	√	X	√	X	X

CHAPTER 5 – CONCLUSION AND RECOMMENDATIONS

5.0 INTRODUCTION

This study determined university students' interpretation and use of food labels as well as evaluating food labels according to the new South African food labeling regulation in order to create an understanding of the specific needs and problems experienced by the consumers when they use food labels.

5.1 CONCLUSION

Student consumers are frequently exposed to food labels. During this exposure, they become merely aware of food labels and at times find food label information very difficult to interpret and use. Food products manufactured in South Africa and those imported to the country are to be labeled according to the new South African food labeling regulations from 01 March, 2011. Therefore, this study aimed to provide clarity on university student consumers' interpretation and use of food labels. Secondly, it aimed to determine whether sample products comply with the new South African food labeling regulations.

The majority of the respondents purchase and prepare their own food though the residences have cafeteria facilities where the students can purchase prepared food. The respondents read food labels selectively especially of a product they purchase for the first time and they claim to find food labels easy to understand. However, their actual interpretation of the information indicated that they did not understand the meaning of the food labels. The majority of the respondents revealed that they do not read food labels for detailed information and there is a significant difference between male and female respondents as indicated by p=0.019. The results rejected H1 which stipulated that, male and female university student consumers read food labels as most of the responses had a p-value more than 0.05.

The results of this study revealed clearly that the rBST free symbol does not carry any useful information for the students as they do not know the meaning of it. They is a significant difference between the male and female respondents as indicated by p=0.046. Similarly, respondents also revealed that they do not know the meaning of the saturated fat index symbol

and a significant difference between male and female respondents as indicated by p=0.015 is evident. Once again alarming that more respondents did not know the meaning of the SABS symbol as indicated by a significant difference between the male and female respondents p=0.006. The female respondents tend to understand the meaning correctly more often while the male respondents more often interpreted the meaning incorrectly. The results reveal a rejection or acceptance of H2 as indicated by (p<0.05 and p>0.05) respectively. The hypotheses stipulated that, male and female university student consumers interpret food label information correctly. These results show a serious need for information to consumers.

On the importance of the food label symbols, majority of the respondents revealed that they perceive the green dot, vegetarian, certified 100% organic, high in dietary fibre symbols fairly important and very important respectively and they were also undecided on the importance of symbols such as the EcoCert and the antioxidant. The respondents also reveal that they found the GI logo very difficult to use as well as not credible and do not know if the product bearing the logo is healthy to use though some indicated that they check for the indicator every time when they purchase the product with the logo. The results rejected H3 which stipulated that, male and female university student consumers perceive label details important. Most of the responses had a p-value more than 0.05.

Respondents perceived the date mark; price, cooking/preparation, brand name, product mass/volume, nutrition information and ingredients list very important while manufacturer name and contact details, environmental information and storage instructions were perceived fairly important. On the other hand, respondents were undecided on whether the country of origin and additives and artificial colours were important to them. This implies that consumers are more aware of the healthy eating and want to make proper food choices during product purchasing. Respondents also revealed that during the purchasing of dairy products, canned foods, frozen foods, meat and fish products and ready-made foods they look at the use-by-date while on biscuits they look at both the use-by-date and the kilojoules. This result indicated that the shelf life or safety of the product is more important than the other information. The results rejected H3 which stipulated that, male and female university student consumers perceive label details important with p-value more than 0.05.

The most used source of food label information by the consumers use is the magazines, television, doctor, books/leaflets and parents or other relatives. The least used source of information is the internet and the radio. For the male respondents the least used sources of information was internet, school subjects, study material/coursework and radio, for the female respondents it was radio, newspaper and study material/coursework while they see the internet and what they have learnt in school subjects at the same level. The internet, health club and gym are the only sources of information on which there was a significant difference between the male and female respondents with $p=0.016$ and $p=0.053$ values respectively. The results rejected H1 which stipulated that, male and female university student consumers read food labels as most of the responses had a p-value more than 0.05. This proofs that various sources of food label information can be used to inform consumers but they do not use them as expected.

On the other hand, the study revealed that majority of the products is labeled according to the new South African food labeling regulations with a few exceptions. The new regulations stipulated that the food label must have all the necessary information to inform and avoid misleading the consumers. Thus, most food manufacturers comply with the food labeling regulations so as to provide the necessary information to the consumers. The H4 which stipulated that food labels abide to the new food regulations in South African was not statistically analysed so it cannot be assumed that it was rejected or accepted.

By means of the results, consumers' interpretation and use of food labels as well as evaluation of food labels with regard to the new South African food labeling regulations, as stated in the objectives of the study, were determined. In general, the current interpretation of food label information of the students of the University of the Free State can be regarded as negative. It indicates a shortcoming in consumer education in South Africa. These findings prove on the lack of available data on South African consumers' interpretation and use of food labels. Further research regarding consumers' education on interpretation and use of food labels and evaluation of food labels according to the new South African food labeling regulations is needed.

The results of this study can be implemented by the food manufacturers to provide clear and understandable information to guide the interpretation of food labels which comply with the new

South African food labeling regulations that can also be utilized to make informed decisions during consumers' purchases and usage of food products. The implication will result in consumers developing positive interpretation and use of food labels, consequently enhancing their food shopping experiences. As a result of these positive interpretation and use of food labels, consumers' food label usage can be enhanced, corresponding to the purpose of food labels as communication medium between consumers and the food industry.

As indicated by the Consumer Protection bill, consumers have the right to be informed and this should be the mandate of the food industry and the Department of Consumer Education to educate consumers on the food labeling regulations and the new label information that effected as of 01 March, 2011.

5.2 LIMITATION OF THE STUDY

Several limitations were evident during the study such as time constraints, the difficulty in recruiting participants, unwillingness of some respondents to participate in the study and respondents not interested in the topic. Data was collected when the students were back from vacation but they complained that the timing of data collection was not good for them since they were busy with the academic work. Furthermore, low response rate of questionnaires was evident; students seemed not willing to participate and claimed to be busy. Respondents must be willing to answer the questionnaire (Babbie, 2009:259) which was not the case with this study. Some respondents did not even hand back the questionnaires, they claimed to have misplaced them. In the questionnaire used for data collection, there was no inclusion of the religion question in the demographic section which could have facilitated the interpretation of the students' consumers' use of religion logos on products. So this could be one of the limitations of the study and why the students could not give the correct responses for the religious symbols/logos since they do not belong to those religions.

5.3 RECOMMENDATIONS

Respondents concurred that the information currently on food labels is important.

- However, consumers were not well informed although the right to be well-informed consumers is stipulated by the Consumer Protection Bill of 2008. Therefore, it is the mandate of the food industry and the Department of Consumer Education to educate consumers on the food labeling regulations and the new label information on food labels.

- The food industry may benefit from the new food labeling regulations which guarantees improved food labels, thus improved informational value to the consumer and more purchasing of their products, and therefore should get involved in consumer education programmes to develop a better informed consumers by developing educational information materials and make them available to consumers to enable consumers to interpret label information correctly.

- There is a much larger scope to which this study could extend and it would be very useful for a future research to determine the use of the label on a much broader scale among a greater, more representative sample of South Africans.

- The implementation of the new labeling legislation will create an excellent opportunity for the food manufacturers, especially in terms of what information may not be included on the label. If used to its full potential and if all consumers are informed on how to use the label with regard to what to look for and how to apply this information, the interpretation and use of information on the new food label can become a valuable communication tool.

- Future research can also be aimed at comparison between different regions in South Africa of consumers of different educational backgrounds on the interpretation and use of food labels.

- Lastly, a further study on the use of symbols/logos can be conducted in broader scale among a greater representative sample of South Africa.

SUMMARY

The purpose of this study was to determine South African university students' interpretation and use of food labels as well as evaluating food labels according to the new South African food labeling regulations. A quantitative research approach was used and data collected using self-administered questionnaires consisting of 67 scaled questions. Respondents were recruited in students' residences where they were readily available. Five hundred questionnaires were distributed equally between five male and female residences respectively on the Bloemfontein campus of the University of the Free State. A total of 152 respondents completed the questionnaires which were analyzed statistically using the SPSS version 17.0 software package. The results of the study revealed that respondents were aware of label information but could not interpret most of them correctly. Respondents perceived label aspects information as important and perceived the date mark, price cooking/preparation, brand name, product mass/volume, nutrition information and ingredients list very important and the country of origin as the least important label aspect. With regard to source of information, the source of food label information most used by the consumers is magazines, television, doctor, books/leaflets and parents or other relatives. The least used source of information is the internet and the radio. The internet, health club and gym are the only sources of information on which there was a significant difference between the male and female respondents. The results also revealed that majority of the products were labeled according to the new South African food labeling regulations with a few exceptions. These results imply that the student consumers sample did not interpret food label information correctly and they can therefore not use it positively. It is recommended that educational information materials be developed and made available to consumers to enable consumers to interpret label information correctly. Future research can be aimed at the development of relevant informational material.

Keywords:

Consumer Education

Consumer rights

Consumer protection

Food labeling

Food labeling regulations

Food label symbols/logos

Healthy eating

Label Information

Packaged food

Student consumers

OPSOMMING

Die doel van die studie was om te bepaal hoe Suid-Afrikaanse universiteitstudente voedsel etikette interpreteer en gebruik asook om voedseletikette te evalueer volgens die nuwe Suid-Afrikaanse voedsel etikettering regulasies. 'n Kwantitatiewe benadering is gebruik om die data te versamel met vraelyste wat uit 67 vrae bestaan wat deur die respondent self ingevul is. Vyfhonderd vraelyste is in vyf mans- en vyf dameskoshuise van die Bloemfontein kampus van die Universiteit van die Vrystaat versprei. 'n Totaal van 152 respondente het die vraelyste voltooi. Die vraelyste is statisties ontleed deur gebruik te maak van die SPSS-weergawe 17 sagtewarepakket. Die resultate van die studie het aan die lig gebring dat studente bewus is van etiket-inligting maar dat hulle die meeste daarvan nie korrek kan interpreteer nie. Die respondente het sekere aspekte van etiketinligting as belangrik beskou. Die datum, prys per item, handelsnaam, produkmassa, volume- en voedingsinligting is as baie belangrike aspekte uitgewys terwyl die land van oorsprong as die mees onbelangrike aspek uitgewys is. Tydskrifte, televisie, dokters, boeke en pamflette en ouers of ander familie is deur die respondent as die belangrikste bronne van voedseletiketeringsinligting uitgewys. Die internet en die radio is die bronne wat hulle die minste gebruik. Die internet, gesondheidsklub en gymnasium as inligtingsbronne was die enigste bronne van inligting waarvoor daar 'n betekenisvolle verskil tussen mans en dames respondente was wat dit die belangrikheid van die bron betref. Die resultate het ook getoon dat die meeste produkte wel aan die nuwe Suid Afrikaanse Voedsel Etiketeringsregulasies voldoen met net enkele uitsonderings. Hierdie resultate impliseer dat die steekproef studente as verbruikers nie die voedseletiketeringsinligting korrek interpreteer nie en dit gevolglik nie positief kan gebruik nie. Dit word aanbeveel dat opvoedkundige inligtingsmateriaal saamgestel en beskikbaar gemaak word aan verbruikers om verbruikers in staat te stel om inligting korrek te interpreteer. Toekomstige navorsing kan daarop gerig word om sodanige inligtingsmateriaal te ontwikkel.

Sleutelwoorde:

Verbruikersopvoeding

Verbruikersregte

Verbruikersbeskerming

Voedseletikettering

Voedsel etikettering regulasies

Voedseletikettering simbole/ logo's

Gesond eet

Etiket inligting

Verpakte voedsel

Studente verbruikers

REFERENCES

ACTS **see** SOUTH AFRICA.

AKKERMAN, S., BOSSCHE, P.V.D., ADMIRAAL, W., GIJSELAERS, W., SEGERS, M. SIMONS, R.J. & KIRSCHNER, P. (2007). Reconsidering group cognition: from conceptual confusion to a boundary area between cognitive and socio-cultural perspectives? *Educational Research Review*, 2:39-63.

ALBERT, J. 2010. Introduction to innovations in food labeling. (*In* Albert, J., *ed.* Innovations in food labeling. Oxford: Woodhead Publishing Limited).

ALI, J. & KAPOOR.S. 2009. Understanding consumers' perspectives on food labeling in India. *International Journal of Consumer Studies*, 33:724–734.

ANDERSON, G. 2010. The recycle logo & symbol. http://www.earthshop.co.uk/ecosymbols.html. Date of access: 25/10/10.

ANDREWS, D., NONNECKE, B. & PREECE, J. 2003. Electronic survey methodology: a case study in reaching hard-to-involve internet users. *International journal of human–computer interaction*, 16(2):185–210.

AZZARA, C.V. (2010). Questionnaire design for business research. United States of America: Tate publishing & Enterprises.

BABBIE, E.R. 2009. The practice of social research. 12th ed. Florence, KY: Cengage Learning.

BABBIE, E. & MOUTON, J. 2003. The practice of social research. Cape Town, SA: Oxford University Press.

BALASUBRAMANIAN, S.K. & COLE, C. 2002. Consumers' search and use of nutrition information: the challenge and promise of the nutrition labeling and education act. *Journal of Marketing*, 66:112-127.

BLAIKIE, N. 2000. Designing social research. San Francisco, CA: Blackwell.

BLANCHFIELD, J.R. 2000. Food labeling. Cambridge, CBI: Woodhead publishing.

BORGMEIER, I. & WESTENHOEFER, J. 2009. Impact of different food label formats on healthiness evaluation and food choice of consumers: a randomized-controlled study. *BioMed Central public health*, 9(1):184-196.

BRANDT, M., MOSS, J. & FERGUSON, M. 2009. The 2006–2007 food label and package survey (FLAPS): nutrition labeling, trans fat labeling. *Journal of Food Composition and Analysis*, 22:S74–S77.

BREN, L. 2010. New food labeling law: food labels identify allergens more clearly. http://www.foodreference.com/html/art-new-labels.html. Date of access: 10/06/2010.

BRODY, A.L. & LORD, J.B. 2000. Developing new food products for a changing marketplace. Boca Rato, Florida: CRC Press.

BUREAU, J.C. & VALCESCHINI, E. 2003. European food-labeling policy: successes and limitations. *Journal of food distribution research*, 34(3):70-73.

BURTON, D. 2000a. Data collection issues in survey. (*In* Burton, D., ed. Research training for social scientists. Thousand Oaks, CA: SAGE).

BURTON, D. 2000b. Sampling strategies in survey research (*In* Burton, D., ed. Research training for social scientists. Thousand Oaks, CA: SAGE).

CASWELL, J.A., NING, Y., LIU, F. & MOJDUSZKA, E.M. 2003. The impact of new labeling regulations on the use of voluntary nutrient-content and health claims by food manufacturers. *Journal of Public Policy and Marketing*, 22 (2):147–158.

CHEFTEL, J.C. 2005. Food and nutrition labeling in the European Union. *Food Chemistry*, 93:531–550.

CLOVER. (consumer.hotline@clover.co.za) 25 Mar. 2010. Meanings of food label symbols. E-mail to: Mmopelwa, M. (lebza2010@yahoo.co.uk).

CORNELISSE-VERMAAT, J.R., PFAFF, S., VOORDOUW, J., CHRYSSOCHOIDIS, G., THEODORIDIS, G., WOESTMAN, L. & FREWER, L.J. 2008. The information needs and labeling preferences of food allergic consumers: the views of stakeholders regarding information scenarios. *Trends in food science & technology*, 19:669-676.

COULSON, N.S. 2000. An application of the stages of change model to consumer use of food labels. *British Food Journal*, 102(9):661-668.

COWBURN, G. & STOCKLEY, L. 2005. Consumer understanding and use of nutrition labeling: a systematic review. *Public health nutrition:* 8(1), 21–28.

CRESWELL, J.W. 2003 Research design: Qualitative, quantitative and mixed methods approaches. 2nd ed. London: SAGE Publications.

DELPORT, C.S.L. 2005. Quantitative data collection methods. (*In* De Vos, A.S., Strydom, H., Fouché, C.B. & Delport, C.S.L., *ed.* Research at grass roots: for the social sciences and human service professions. 3rd ed. Pretoria: Van Schaik Publishers).

DELPORT, L. & STEENKAMP, G. 2010. The south african glycemic index & load guide. http://www.gifoundation.com/. Date of access: 25/10/10.

DEPARTMENT of HEALTH **see** SOUTH AFRICA. Department of Health.

DE VOS, A.S. 2005. Scientific theory and professional research. (*In* De Vos, A.S., Strydom, H., Fouché, C.B. & Delport, C.S.L., *eds.* Research at grass roots: for the social sciences and human service professions. 3rd ed. Pretoria: Van Schaik).

DE VOS, A.S., SCHULZE, S. & PATEL, L. 2005. Scientific theory and professional research. (*In* De Vos, A.S., Strydom, H., Fouché, C.B. & Delport, C.S.L., *eds.* Research at grass roots: for the social sciences and human service professions. 3rd ed. Pretoria: Van Schaik).

DOMYEI, Z. 2002. Questionnaires in second language research: construction, administration and processing. Florence, KY: Routledge.

DRICHOUTIS, A.C, LAZARIDIS, P. & NAYGA, R.M. 2005. Nutrition knowledge and consumer use of nutritional food labels. *European review of agricultural economics*, 32 (1):93–118.

DRICHOUTIS, A.C., LAZARIDIS, P. & NAYGA, R.M. 2006. Consumers' use of nutritional labels: a review of research studies and issues. *Academy of Marketing Science Review*, 9:1-22.

ECOCERT PROFESSIONALISM & SERVICES. 2010. The new eu organic farming logo is available. http://www.ecocert.com/. Date of access: 25/10/10.

EVANS, E. 2008. Everybody wins! with a heart-healthy lifestyle. Canolainfo.org. Date of access: 25/10/10.

FEUNEKES, G.I.J., GORTEMAKERA, I.A., WILLEMSA, A.A., LIONA, R. & VAN DEN KOMMER, M. 2008. Front-of-pack nutrition labeling: testing effectiveness of different nutrition labeling formats front-of-pack in four European countries. *Appetite*, 50:57–70.

FOOD STANDARDS AGENCY. 2004. If a food is labeled 'vegetarian' or 'suitable for vegetarians' what does that mean? http://www.medicalnewstoday.com/articles/13302.php. Date of access: 25/10/10.

FOUCHÉ, C.B & DE VOS, A.S. 2005. Quantitative research designs. (*In* De Vos, A.S., Strydom, H., Fouché, C.B. & Delport, C.S.L., eds. Research at grass roots: for the social sciences and human service professions. 3rd ed. Pretoria: Van Schaik)

GARRETSON, J.A. & BURTON, S. 2000. Effects of nutrition facts panel values, nutrition claims, and health claims on consumer attitudes, perceptions of disease-related risks, and trust. *Journal of Public Policy & Marketing*, 19 (2):213–227.

GILLHAM, B. 2000. Developing a questionnaire. London: Continuum.

GOKTOLGA, Z.G., BAL, S.G. & KARKACIER, O. 2006. Factors effecting primary choice of consumers in food purchasing: the turkey case. *Food control*, 17(11):884-889.

GOLDENBERG, I. & GOLDENBERG, H. 2007. Family therapy: an overview. 7th ed. Belmont, CA: Thomson Higher Education.

GRAHAM, P., HARKER, D., HARKER, M. & TUCK, M. 1994. Branding food endorsement programs: the national heart foundation of Australia. *Journal of product and brand management*, 3(4):31-43.

GRATTON, C. & JONES, I. 2004. Research methods for sport studies. 2nd ed. New York, NY: Routledge.

GRUNERT, K.G. 2002. Current issues in the understanding of consumer food choice. *Trends in Food Science & Technology*, 13: 275–285.

GRUNERT, K.G. & WILLS, J.M. 2007. A review of european research on consumer response to nutrition information on food labels. *Journal for public health*, 15:385–399.

HATTERSLEY, S. & CHAN, C.H. 2010. Labeling of allergenic foods of concern in europe. (*In* Albert, J., *ed*. Innovations in food labeling. Oxford: Woodhead Publishing Limited).

HAWKES, C. 2010. Government and voluntary policies on nutrition labeling: a global overview. (*In* Albert, J., *ed*. Innovations in food labeling. Oxford: Woodhead Publishing Limited).

HAYES, N. 2000. Doing psychological research: gathering and analysing data. Buckinham: Open University Press.

HIGGINSON, C.S., RAYNER, M.J., DRAPER, S. & KIRK, T.R. 2002. How do consumers use nutrition label information? *Nutrition and food science*, 32(4):145-152.

HOLMES, S. 2007. How to buy organic foods: the art of feeding your family healthy foods on a budget. http://www.associatedcontent.com/article/320328/how_to_buy_organic_foods.html?cat=22. Date of access: 25/10/10.

HOOGLAND, C., DE BOER, J. & BOERSEMA, J.J. 2007. Food and sustainability: do consumers recognize, understand and value on-package information on production standards? *Appetite*, 49(1):47-57.

INSCH, A. & FLOREK, M. 2009. Prevalence of country of origin associations on the supermarket shelf. *International journal of retail and distribution management*, 37(5):453-471.

JACOBS, S.A., DE BEER, H. & MENT LARNEY, M. 2010. Adult consumers' understanding and use of information on food labels: a study among consumers living in the potchefstroom and klerksdorp regions, south africa. *Public Health Nutrition*, 1-13.

JAY, M., ADAMS, J., HERRING, S.J., GILLESPIE, C., ARK, T., FELDMAN, H., JONES, V., ZABAR, S., STEVENS, D. & KALET, A. 2009. A randomized trial of a brief multimedia intervention to improve comprehension of food labels. *Preventive Medicine*, 48:25–31.

KAISER, S.B. 1990. The social psychology of clothing: symbolic appearances in context. 2nd ed. New York: Fairchild Publications.

KALPAN, R.M. & SACCUZZO, D.P. 2005. Psychological testing: principles, applications, and issues. 6th ed. Belmont, CA: Thomson Wadswarth.

KARLSSON, C., ed. 2008. Researching operations management. New York: Routledge.

KENT, G. 2000. Ethical principles (*In* Burton, D., ed. Research training for social scientists. Thousand Oaks, CA: SAGE. p. 61-80).

KETTERER, E. 2010. Making sense of food labels. www.heartfoundation.co.za. Date of access: 13/08/10.

KOZUP, J.C., CREYER, E.H. & BURTON, S. 2003. Making healthful food choices: the influence of health claims and nutrition information on consumers' evaluations of packaged food products and restaurant menu items. *Journal of Marketing*, 67:19–34.

LAMBERT, S. 2006. High fibre foods. http://www.chateaine.com/en/article/4804--high-fibre-foods&t=High fibre foods/Chatelaine.com&srs=sp. Date of access: 25/10/10.

LAPID, N. 2008. The food allergen labeling and consumer protection act of 2004 (FALCPA): What FALCPA means for gluten-free food shopping. http://celiacdisease.about.com/od/glutenfreefoodshopping/a/FALCPA.htm. Date of access: 25/10/10.

JAY, M., ADAMS, J., HERRING, S.J., GILLESPIE, C., ARK, T., FELDMAN, H., JONES, V., ZABAR, S., STEVENS, D. & KALET, A. 2009. A randomized trial of a brief multimedia intervention to improve comprehension of food labels. *Preventive Medicine*, 48:25–31.

KAISER, S.B. 1990. The social psychology of clothing: symbolic appearances in context. 2nd ed. New York: Fairchild Publications.

KALPAN, R.M. & SACCUZZO, D.P. 2005. Psychological testing: principles, applications, and issues. 6th ed. Belmont, CA: Thomson Wadswarth.

KARLSSON, C., ed. 2008. Researching operations management. New York: Routledge.

KENT, G. 2000. Ethical principles (*In* Burton, D., ed. Research training for social scientists. Thousand Oaks, CA: SAGE. p. 61-80).

KETTERER, E. 2010. Making sense of food labels. www.heartfoundation.co.za. Date of access: 13/08/10.

KOZUP, J.C., CREYER, E.H. & BURTON, S. 2003. Making healthful food choices: the influence of health claims and nutrition information on consumers' evaluations of packaged food products and restaurant menu items. *Journal of Marketing*, 67:19–34.

LAMBERT, S. 2006. High fibre foods. http://www.chateaine.com/en/article/4804--high-fibre-foods&t=High fibre foods/Chatelaine.com&srs=sp. Date of access: 25/10/10.

LAPID, N. 2008. The food allergen labeling and consumer protection act of 2004 (FALCPA): What FALCPA means for gluten-free food shopping. http://celiacdisease.about.com/od/glutenfreefoodshopping/a/FALCPA.htm. Date of access: 25/10/10.

LEATHWOOD, P.D., RICHARDSON, P.D., STRATER, P., TODD, P.M. AND VAN TRIJP, H.C.M. 2007. Consumer understanding of nutrition and health claims: sources of evidence. *British journal of nutrition*, 98:474–484.

LOUREIRO, M.L., GRACIA, A. & NAYGA, R.M. 2006. Do consumers value nutritional labels? *European review of agricultural economics*, 33(2):249–268.

MAY, T. 1998. Social research issues, methods and process. 2nd ed. Buckingham: Open University Press.

MAYO CLINIC STAFF. 2010. High-fiber foods. guidelines for sites linking to mayoclinic.com. Date of access: 25/10/10.

MCILLVEEN, H. & SEMPLE, L. 2002. Seeing is believing: current consumer use and understanding of food labels. *Nutrition and food science*, 32(2):80-84.

MITCHELL, H.L. 2008. The glycemic index concept in action. *American Journal Clinical Nutrition*, 87(suppl):244S– 6S.

MUIJS, D. 2004. Doing quantitative research in education with SPSS. Thousand Oaks, CA: SAGE.

NAYGA, R.M. 2000. Nutrition knowledge, gender, and food label use. *The journal of consumer affairs*, 34(1):97-112.

NØRGAARD, M.K. & BRUNSØ, K. 2009. Families' use of nutritional information on food labels. *Food Quality and Preference*, 20:597–606.

PARKER, D. 2009. New regulations to prevent negative labeling. http://www.engineeringnews.co.za. Date of access: 01/03/10.

PETERS-TEXEIRA, A. & BADRIE, N. 2005. Consumers' perception of food packaging in Trinidad, West Indies and its related impact on food choices. *International Journal of Consumer Studies*, 29(6):508–514.

PICCIANO, A.G. 2004. Educational research primer. London: Continuum.

PIENIAK, Z., VERBEKE, W., SCHOLDERER, J., KAREN BRUNSØ, K. & OLSEN, S.O. 2007. European consumers' use of and trust in information sources about fish. *Food Quality and Preference*, 18:1050–1063.

PRATHIRAJA, P.H.K. & ARIYAWARDANA, A. 2003. Impact of Nutritional Labeling on Consumer Buying Behavior. *Sri Lankan Journal of Agricultural Economics*, 5(1):35-46.

PRZYREMBEL, H. 2004. Food labeling legislation in the EU and consumers information. *Trends in food science & technology* 15:360–365.

RANDELL, A.W. 2010. The codex alimentarius and food labeling: delivering consumer protection. (*In* Albert, J., *ed.* Innovations in food labeling. Oxford: Woodhead Publishing Limited).

RAYNER, M., ANNETTE BOAZ, A. & HIGGINSON, C. 2001. Consumer use of health-related endorsements on food labels in the United Kingdom and Australia. *Journal of Nutrition Education*, 33(1):24-30.

RUMBLE, T., WALLACE, A., DEEPS, C., McVAY, K., CURRAN, M., ALLEN, J., STAFFORD, J. & O'SULLIVAN. A. 2003. New food labeling initiatives in Australia and New Zealand. *Food Control*, 14:417–427.

SAINFO REPORTER, 2010. Understanding consumer education. http://www.ncf.org.za/main.php?include=about/conseducation.html&menu=menus/services.htm. Date of access: 04/11/10.

SANLIER, N. & KARAKUS. S.S. 2010. Evaluation of food purchasing behaviour of consumers from supermarkets. *British Food Journal*, 112(2):140-150.

SCHEIDT, D.M. & DANIEL, E. 2004. Composite Index for Aggregating Nutrient Density Using Food Labels: Ratio of Recommended to Restricted Food Components. *Journal for nutritional educational behaviour*, 36:35-39.

SCHIFFMAN, L.G. & KANUK, L.L. 2007. Consumer behavior. 9th ed. Upper Saddle River, NJ: Prentice Hall.

SCHWARZ, N. & OYSERMAN, D. 2001. Asking questions about behavior: cognition, communication and questionnaire construction. *American journal of evaluation*, 22(2): 127–160.

SCHÖNFELDT, H.C. & GIBSON, N. 2009. Healthy eating guidelines in the south african context. *Journal of food composition and analysis*, 22(1): 568-573.

SCHUTT, R.K. 2006. Investigating the social world: the process and practice of research. 5th ed. Thousand Oaks, CA: SAGE.

SCOTT, J. R. 2008. How to understand food labels. http://weightloss.about.com/od/nutrition/a/blfoodlabels_3.htm. Date of access: 13/05/10

SILAYOI, P. & SPEECE, M. 2007. Importance of packaging attributes: a conjoint analysis approach. *European journal of marketing*, 41(11/12):1495-1517.

SILVERMAN, D. 2000. Doing qualitative research: a practical handbook. Thousand Oaks, CA: SAGE.

SINGLA, M. 2010. Usage and understanding of food and nutritional labels among Indian consumers. *British Food Journal*, 112(1):83-92.

SMITH, S.C., TAYLOR, J.G. & STEPHEN, A.M. 2000. Use of food labels and beliefs about diet-disease relationships among university students. *Public Health Nutrition*, 3(2):175-182.

SOLOMON, M.R. 2007. Consumer behavior: buying, having, and being. 7th ed. Upper Saddle River, NJ: Pearson Prentice Hall.

SOUTH AFRICA. 2008. Consumer protection bill. Pretoria: Government Gazette.

SOUTH AFRICA. 2010. Department of health. Speeches and statements. Pretoria: Government Gazette.

SOUTH AFRICA. 2010. Foodstuffs, cosmetics and disinfectants amendment Act 54 of 1972, GNR 146. Pretoria: Government Gazette.

STEENKAMP, G. 2007. New food labeling and advertising regulations. http://www.gabisteenkamp.co.za/food%20labeling.htm. Date of access: 15/03/10.

STRYDOM, H. 2005a. Ethical aspects of research in the social sciences and human service professions. (*In* De Vos, A.S., Strydom, H., Fouché, C.B. & Delport, C.S.L., *eds*. Research at grass roots: for the social sciences and human service professions. 3rd ed. Pretoria: Van Schaik Publishers).

STRYDOM, H. 2005b. Sampling and sampling methods. (*In* De Vos, A.S., Strydom, H., Fouché, C.B. & Delport, C.S.L., *eds*. Research at grass roots: for the social sciences and human service professions. 3rd ed. Pretoria: Van Schaik Publishers).

SYNODINOS, N.E. 2003. The "art" of questionnaire construction: some important considerations for manufacturing studies. *Integrated manufacturing system*, 14(3):221-237.

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TAWFIK, L. 2010. Making sense of food labels. http://www.islamonline.net/servlet/Satellite?c=Article_C&cid=1157962475181&pagename=Zon e-English-HealthScience%2FHSELayout. Date of access: 13/08/10.

TAYLOR, C.L. & WILKENING, V.L. 2008. How the nutrition food label was developed, part 1: the nutrition facts panel. *Journal of the American dietetic association*, 108(3): 437-442.

TEISL, M.F., ROE, B. & HICKS, R.L. 2002. Can eco-labels tune a market? evidence from dolphin-safe labeling. *Journal of Environmental Economics and Management*, 43:339-359.

TESSIER, S., EDWARDS, C.A. & MORRIS, S.E. 2000. Use and knowledge of food labels of shoppers in a city with a high proportion of heart disease. *Journal of Consumer Studies and Home Economics*, 24:35–40.

THE SABS AUDITORS. 2010. Conformity assessment: certification introduction. https://www.sabs.co.za/index.php?page=certification. Date of access: 25/10/10.

THOMAS, R.M. 2003. Blending qualitative and quantitative methods in theses and dissertations. Thousand Oaks, CA: SAGE.

THOMAS, B. & BISHOP, J., eds. 2007. Manual of dietetic practice. 4th ed. Oxford: Wiley Blackwell.

THYER, B. 2009. The handbook of social work research methods. 2nd ed. Thousand Oaks, CA: SAGE.

UNDERWOOD, R.L., KLEIN, N.M. & BURKE, R.R. 2001. Packaging communication: attentional effects of product imagery. *Journal of product and brand management*, 10(7):403-422.

VAN DILLEN, S.M.E., HIDDINK, G.J., KOELEN, M.A., DE GRAAF, C. & VAN WOERKUM, C.M.J. 2003. Understanding nutrition communication between health professionals and consumers: development of a model for nutrition awareness based on qualitative consumer research. *American Journal Clinical Nutrition*, 77:1065S–72S.

VERBEKE, W. 2005. Agriculture and the food industry in the information age. *European Review of Agricultural Economics*, 32 (3):347–368.

VERBEKE, W. & WARD, R.W. 2006. Consumer interest in information cues denoting quality, traceability and origin: An application of ordered probit models to beef labels. *Food quality and preference*, 17:453–467.

VERMEULEN, H. & BIENABE, B. 2007. What about the food 'quality turn' in south africa? focus on the organic movement development. (Poster paper prepared for presentation at the 105th EAAE seminar 'international marketing and international trade of quality food products'. Bologna: Italy. p. 1-19).

VIDAR, M. 2010. International legal frameworks for food labeling and consumer rights. (*In* Albert, J., *ed.* Innovations in food labeling. Oxford: Woodhead Publishing Limited).

WANSINK, B., SONKA, S.T. & HASLER, C.M. 2004. Front-label health claims: when less is more. *Food policy*, 29(6):659-667.

WELLS, L.E., FARLEY, H. & ARMSTRONG, G.A. 2007. The importance of packaging design for own-label food brands. *International journal of retail & distribution management*, 35(9):677-690.

WILES, N.L., PATERSON, M. & MEAKER, J.L. 2009. What factors determine the use of the nutrition information on the food label when female consumers from Pietermaritzburg select and purchase fat spreads? *South African Journal Clinical Nutrition*, 22(2):69-73.

WOLEVER, T.M.S., BRAND-MILLER, J.C., ABERNETHY, J., ASTRUP, A., ATKINSON, F., AXELSEN, M., BJÖRCK, I., BRIGHENTI, F., BROWN, R., BRYNES, A., CASIRAGHI, M., CAZAUBIEL, M., DAHLQVIST, L., DELPORT, E., DENYER, G.S., ERBA, D., FROST, G., GRANFELDT, Y., HAMPTON, S., HART, V.A., HATÖNEN, K.A., HENRY, C.J., HERTZLER, S., HULL, S., JERLING, J., JOHNSTON, K.L., LIGHTOWLER, H., MANN, N., MORGAN, L., PANLASIGUI, L.N., PELKMAN, C., PERRY, T., PFEIFFER, A.F.H., PIETERS, M., RAMDATH, D.D., RAMSINGH, R.T., ROBERT, S.D., ROBINSON, C., SARKKINEN, E., SCAZZINA, F., SISON, D.C.D., SLOTH, B., STANIFORTH, J., TAPOLA, N., VALSTA, L.M., VERKOOIJEN, I., WEICKERT, M.O., WESELER, A.R., WILKIE, P. & ZHANG, J. 2008. Measuring the glycemic index of foods: interlaboratory study1–5. *American Journal Clinical Nutrition*, 87(suppl):247S–57S.

YOUNG AND SWINBURN, 2002. Impact of the Pick the Tick food information programme on the salt content of food. *Health promotion international*, 17(1):13-19.

APPENDIX 1 – COVER LETTER

UNIVERSITEIT VAN DIE VRYSTAAT
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Dear Students

This serves to inform you that **Ms Malebogo Mmopelwa**, Student Number: 2009103694 is a M.Sc Home Economics student at the University of the Free State doing a dissertation on the topic: **An evaluation of food labels and students interpretation and use of food labels**. I have to collect data on this topic and have selected the UFS students as my study population. The assumption is that university students are more concerned with healthy eating lifestyles which may influence the evaluation and use of general food labels during purchasing.

The topic aims at determining whether student consumers use the general information on food labels and know the meaning of all items on a food label. Collected data will benefit both the consumers and manufacturer in that manufacturer will know which information consumers do not know and use. Thereafter, the manufacturers will be able to avail the necessary information to the consumers who will be well informed, buy their products and have quality food choices thereof.

Please answer this questionnaire with honesty, your anonymity and confidentiality will be respected. The questionnaire is in two sections of sixty-five items and can take you 10-15 minutes to complete. I hope you will be able to answer this questionnaire within a weeks' time and that will be highly appreciated.

For more information concerning the topic please contact the following people:
Researcher   **Supervisor** – Prof H.J.H. Steyn
Cell - 0824251058   Tel – 05140123204
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Thank you in advance.

Yours truly

Malebogo Mmopelwa
23/08/2010

APPENDIX 2 – QUESTIONNAIRE

THE EVALUATION OF FOOD LABELS AND STUDENT'S INTERPRETATION AND USE OF FOOD LABELS
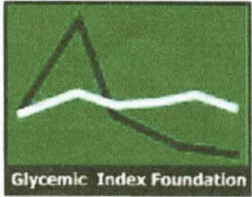
Question 1

		Yes	No
1.a) The following questions want to find out how you understand and use food labels. Please answer honestly by encircling the appropriate response. Do you....			
1	purchase the household food?	1	2
2	read food labels?	1	2
3	prepare your own food?	1	2
4	refer to food labels when purchasing a food product for the first time?	1	2
5	refer to food labels for every kind of food product?	1	2
6	look at broad nutrition claims on food labels (e.g. low fat, low sodium, high fibre)?	1	2
7	find food labels easy to understand?	1	2
8	read detailed information on food labels (e.g. list of ingredients, nutritional composition)?	1	2
9	read food labels because you are a consumer with special needs related to diet and health?	1	2
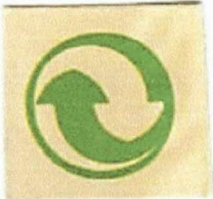
1.b) Below are symbols that are found on food labels. What information do you get from them? If you do not know do not answer.

	SYMBOL	INFORMATION
1		
2	**Saturated fat index**	

1.b) Below are symbols that are found on food labels. What information do you get from them? If you do not know do not answer.

	SYMBOL	INFORMATION
3	B FS/UC D Milchik	
4	Each 250 ml glass contains — Energy 450 kJ 5%, Sugars 27 g 29%, Fat 0 g 0%, Saturates 0 g 0%, Sodium 5 mg <1% — % of your Guideline Daily Amount (GDA). Based on a 8400 kJ diet. 2 L = 8 Glasses of 250 ml	
5	SABS APPROVED	
6		

7		
8		
9		
10		

1.c) Please answer this question by indicating how important you consider the following food label symbols by encircling the appropriate response. If you do not know what it mean leave it blank.

1 Not important at all	2 Fairly unimportant	3 Undecided	4 Fairly important	5 Very important			

	SYMBOL	1	2	3	4	5
1		1	2	3	4	5
2		1	2	3	4	5
3		1	2	3	4	5
4		1	2	3	4	5
5		1	2	3	4	5
6		1	2	3	4	5

4

1.d) The following questions want to determine if you use the symbol below on food labels. Please answer honestly by encircling the appropriate response.

Glycemic Index Foundation
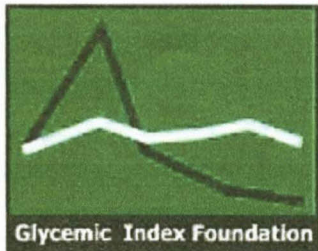
The Glycemic Index Foundation of South Africa (GIFSA) Logo

1	How difficult or easy is it for you to understand this health indicator?	Very difficult to understand 1	Difficult to understand 2	Undecided 3	Easy to understand 4	Very easy to understand 5
2	How credible / reliable is this health indicator to you?	Not at all credible 1	Not credible 2	Undecided 3	Credible 4	Extremely credible 5
3	How healthy will the product be to you?	Not healthy at all 1	Not healthy 2	Undecided 3	Healthy 4	Very healthy 5
4	How important is this indicator to you?	Not important at all 1	Slightly unimportant 2	Undecided 3	Slightly important 4	Very important 5
5	How often do you check this label before buying an item?	Never 1	Seldom 2	Sometimes 3	Often 4	Every time 5

5

Question 2

2.a) Please answer this question by indicating how important you consider the following attributes of food labels by encircling the appropriate response.

1	2	3	4	5
Not important at all	Fairly unimportant	Undecided	Fairly important	Very important

	Food label attribute	1	2	3	4	5
1	Preparation/cooking instructions	1	2	3	4	5
2	Brand name	1	2	3	4	5
3	Product mass or volume	1	2	3	4	5
4	Nutrition information	1	2	3	4	5
5	List of ingredients	1	2	3	4	5
6	Manufacturer name and contact details	1	2	3	4	5
7	Country of origin	1	2	3	4	5
8	Price	1	2	3	4	5
9	Additives or artificial colours	1	2	3	4	5
10	Date mark (Expiry/best before/use by date)	1	2	3	4	5
11	Environmental information	1	2	3	4	5
12	Storage instructions	1	2	3	4	5

.b) Please answer this question by encircling the appropriate response to indicate which is the most common food label information you look for on the following food products.

		Use-by-date	Kilojoules	Additives	Ingredients list	Nutrient balance	Allergens
	Dairy products	1	2	3	4	5	6
	Canned foods	1	2	3	4	5	6
	Frozen foods	1	2	3	4	5	6
	Meat and fish	1	2	3	4	5	6
	Ready-made meals	1	2	3	4	5	6
	Biscuits	1	2	3	4	5	6

.c) Do you consider the following a source of information on food labels? Please answer honestly by encircling the appropriate response.

	Source of information	Yes	No
1	Television	1	2
2	Radio	1	2
3	Friends/University mates, etc	1	2
4	Magazines	1	2
5	Newspapers	1	2
6	Health club, gym, etc	1	2
7	Doctor	1	2
8	Pharmacist	1	2
9	In-store information	1	2
10	Internet	1	2
11	Books/leaflets	1	2
12	Parents/other relatives	1	2
13	School subject	1	2
14	Study material/coursework at the university	1	2

SECTION B

Socio-demographic characteristics

Question 3

Please complete Question 3 by encircling the appropriate response.

1) How old are you?					
Younger than 19 years	1	20 to 29 years	2	30 years and older	3
2) What is your gender?					
Male		1	Female		2
3) What is your home language?					
Afrikaans	1	English	2	Sotho	3
Tswana	4	Zulu	5	Other, please specify :	6
4) What is the level of your studies at the university?					
Undergraduate	1	Postgraduate	2	Other, please specify:	3
5) Whom do you share your home with?					
No-one	1	Spouse/partner	2	Family members	3
Other, please specify:	4				

APPENDIX 3 – PRODUCT EVALUATION TEMPLATE

PRODUCT EVALUATION ACCORDING TO THE NEW SOUTH AFRICAN FOOD LABELING REGULATIONS

1. PRODUCT	2. LABELED IN ENGLISH LANGUAGE	3. LABEL CLEARLY, VISIBLE AND LEGIBLE	4. LABEL PRINTED ON CONTRASTING BACKGROUND	5. NAME AND ADDRESS OF THE MANUFACTURER, PRODUCER, PROPRIETOR OR CONTROLLING COMPANY	6. PRODUCT NAME	7. DESCRIPTIVE / QUALIFYING WORDS	8. LIST OF INGREDIENTS	9. PICTORIAL REPRESENTATION	10. NET MASS DECLARATION	11. STORAGE INSTRUCTIONS	12. DATE OF MANUFACTURE	13. COUNTRY OF ORIGIN	14. EXPIRY/ BEST BEFORE / USE BY DATE	15. INSTRCTIONS FOR USE	16. PRINTED LABELS ON PACKAGE OR OVERWRAP COVERING	17. NUTRITIONAL AND HEALTH CLAIMS	18. LIST OF ADDITIVEVES / ALLERGENS
DAIRY																	
1 Milk																	
2 Margarine																	
3 Sour milk																	
4 Cheese																	
5 Yoghurt																	
6 Yogi sip																	
7 Butter																	
MEATS AND FISH																	
8 Chicken																	
9 Chicken Vienna																	
10 Canned fish																	
11 Fish fingers																	
12 Prawns																	
13 Tuna																	
14 Corned beef																	
FRUITS AND VEGETABLES																	
15 Apples																	
16 Pears																	
17 Tomatoes																	
18 Carrots																	
19 Canned fruits																	
20 Crushed garlic																	
21 Frozen Mixed vegetables																	
CEREALS																	
22 Maize meal																	
23 Rice																	
24 Spaghetti																	
25 Macaroni																	
26 Flour																	
27 Oats meal																	
28 Bread																	
OTHERS																	
29 Juice																	
30 Biscuits																	
31 Salt																	
32 Chicken Spice																	
33 Cooking oil																	
34 Powdered soup																	
35 Baking powder																	