

Nutrition Labeling: A Study on Industry Practice and Consumer Response in Akwa Ibom State

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Abstract: The study aimed at documenting consumer knowledge and use of nutrition labels as well as the associated socio-demographic variables. The industry practice of food labeling with regard to locally produced and imported food items was also assessed. Purposive sampling was used to select 36 shoppers from 12 supermarkets in Uyo. A total of 400 respondents completed the structured questionnaires, of which that of 324 respondents was collected the same day. A checklist was used to collect information on industry practices in each of the supermarkets visited. Most of the respondents were male (n=171, 53.9%), single (n=130, 40%), aged between 36-51 years (n=118, 36%), attained tertiary education (n=143, 44%) and were civil servants (n=95, 29%). Household size was mainly 1-4 (n=121,). Only 24 (7%) of the respondents have poor nutritional knowledge. Most important factor considered in purchase by the respondents was expiry date (n=100, 31%). Respondents' willingness to read food label is mainly dependent on time as most of them claim not to do so because it is time consuming; however, most educated respondents tend to read food label unlike the uneducated respondents. Manufacturers of local food items have a positive attitude toward NAFDAC registration of their products (78%) but rarely provide information on percentage Recommended Daily Allowance (%RDA). However most imported food items (56%) are not registered by NAFDAC. It is thus recommended that nutrition knowledge should be increased to promote greater use of nutrition information on food labels.

Keywords: Food labeling, Consumers Industry practice, Supermarkets, Uyo

I. Introduction

Food labeling and consumer information is an effective population approach strategy for improving dietary intake. Poor lifestyle, including suboptimal diet, physical inactivity, and tobacco use are leading causes of preventable diseases globally [1]. These diseases include diet-related Non-Communicable Diseases such as diabetes, obesity, high blood pressure, heart diseases and cancer is becoming alarming globally. Worldwide, there is an increase in the rate of diet-related Non-Communicable Diseases (NCDs) [2]. This was initially common in developed countries; however, developing countries are faced with the same NCD threats [3]. This is true especially for developing countries such as Nigeria, facing nutrition transition to stage two. In such countries, there is higher consumption of cheap, energy dense, sugar added, animal fat high and nutrient poor foods; leading to great risk of NCDs. The consumption of "western" food is on a high side because people prefer to eat pre-packaged foods [3], [4]-[6].

Many governments are implementing multi-faceted policy interventions to curb the increased trend of NCDs, through better food choices [7], one of such policy is the adoption of nutrition labeling on pre-packaged foods and beverages. The Codex Alimentarius Commission, established by the Food and Agriculture Organization (FAO) and the World Health Organization (WHO), has developed standards for nutrition guidelines on food products and nutrition labels [8]. The revision of nutrition regulations by governments serves to ensure food safety and also handle nutrition-related NCDs [9]. The American Heart Association, systematically reviewed and graded the current scientific evidence for effective population approaches to improve dietary habits. Following which they listed food labeling and consumer information as one of such strategies that can achieve dietary modification, since even modest population shifts in risk substantially alter health outcomes. Dietary modification also appears more effective than other approaches such as physical exercise, in calorie reduction and easier to achieve than smoking cessation which are other approaches to reducing NCDs [1]. Cardiovascular diseases (CVD), type 2 diabetes mellitus, and adiposity produce tremendous burdens of deaths, lost quality of life, and economic disruption globally. Most of these conditions and their sequelae are preventable or occur at unnecessarily young ages and largely owe to suboptimal lifestyle habits, in particular, poor diet, physical inactivity, and use of tobacco. The resulting burdens on families, communities, and nations are enormous and unsustainable, and the health and economic imperative of improving lifestyle behaviors are fully evident. Nutrition information on food labels could be a cost-effective method of communicating nutrition information to consumers because the information appears at the point of sale for most

packaged foods; although consumers value nutrition when deciding which foods to buy. Nutrition information on food labels is complex and does not always live up to its potential to communicate effectively [10] Prior nutrition knowledge has been advanced as an advantage in the use of nutrition information on food labels by consumers. Such consumers are more likely to understand the information, focus on salient points and use the information in decision making [10]

The National Agency for Food and Drug Administration and Control (NAFDAC) is the regulatory body that regulates and controls the production of prepackaged foods importation, exportation, advertisement, sale and distribution in Nigeria. Pre-Packaged Food (Labeling) Regulations 2005 which replaced the old regulation became the platform used by NAFDAC in regulating food labels [11]. This regulation is in consonance with international best practices and guidelines established by Codex Alimentarius Commission [12].

Constitutionally, importation, production, advertisement, sale and distribution of any no food item in Nigeria has to be registered by NAFDAC. It was established for protection and promotion of public health; this it achieves by ensuring that food, packaged water, drugs, cosmetics, medical devises, chemicals and detergents (also known as regulated products) consumed in Nigeria are wholesome, of good quality and safe [11].

There is higher demand for packaged food among the urban dwellers in Nigeria [13]. There is also increased awareness about a growing number of illnesses caused by improper eating habits and consumption or over-consumption of certain food contents. In reaction to these health implications, several local and international guidelines have been set up to regulate the provision of proper product ingredient information on packaged goods in order to ensure that the final consumer is in a better position to make informed buying choices in line with his or her peculiar purchase or health need. Sadly, most consumers make purchases without taking note of this information possibly because they do not understand the information provided due to complexity of the data [12]. To assist the consumers put this information into consideration in their purchase, prior knowledge is required. This could further help the consumers to ignore marketing features that do not reflect salient nutritional qualities, thereby minimizing information overload. Another importance of prior nutrition knowledge is that it can enable understanding of, and committing into memory, food label nutrition information (e.g., determining whether 600 mg represents a little or a lot of calcium). Thirdly, prior nutrition knowledge could enhance implementation of the understood and remembered information in making food choice.

National codex committee (NCC) was established in Nigeria in 1973 (reconstituted in 2012) with the goal of discussing issues relating to codex and other regional standards on composition, safety, labeling, analysis and marketing of foods. However, one way through which this information can be accessed is food labeling. This can really help to cob these health risks by helping people make better food purchase decisions and adopt healthier eating patterns [14]. This ensures that the health information gap between producers and consumers is bridged which further helps the consumers to make well-informed eating choices [15]. Different labeling and information strategies have been employed to enhance better food purchasing choices. This includes provision of nutrient content information using either back-of-pack product labels or diagrams to indicate important nutrients, and enumeration of ingredients and its quantities on restaurant menus. The US Nutrition Labeling and Education Act of 1990 made the usage of nutrition labels in the form of a standardized “Nutrition Facts” panel on most food packages compulsory. This led to usage of the nutrient data on the Nutrition Facts panel by 60% of US adults in 2005–2006, and about half reported looking at the ingredient list and serving size information in their choices.

Various studies on the use of food labels in developed countries [9], [10], [11], [12] - [14] have been conducted. However, such studies are either few or not available in developing countries, including Nigeria. This work intends to take in-depth look at consumer perception and attitude towards nutritional labeling on packaged goods in Akwa Ibom State with a view to discovering why consumers do not consult product labels and proffering communication solutions to ensure a healthier purchasing culture in our country.

Therefore, this study examines perception of Nigerians about the usage of food labels in Uyo, Akwa Ibom State as a case study. This study intends to find out: the socio-demographic characteristics of respondents in Uyo in April 2016, their nutritional knowledge, what determines their food choices, their opinion about food labels and the factors that influence their willingness to read food labels in Uyo in April 2016. The practice of food labeling in supermarkets in Uyo in April, 2016 will also be documented.

II. Methods

The study was carried out in Uyo, Akwa Ibom state. Uyo is the capital of Akwa Ibom State in the South-South region of Nigeria. Uyo is situated at 5.03° North latitude, 7.93° East longitude and 196 meters elevation above the sea level. The population of Uyo, according to the 2006 Nigerian Census which comprises Uyo and Itu, is 436,606. Purposive sampling was employed in the selection of respondents. Purposive sampling was used to select 36 shoppers each from 12 supermarkets each in Uyo, Akwa Ibom State. Two supermarkets

each were selected along the 6 major roads in Uyo metropolis namely; IkotEkpene road, Oron road, Nwaniba road, Aka road, Abak road and Four lanes. A total of 400 respondents completed the structured questionnaire, of which that of 324 respondents was collected the same day. A checklist was used to collect information on industry practices in each of the supermarkets visited. Data collected were analyzed using Statistical Package for Social Sciences (SPSS), version 20.0 (SPSS Inc. Chicago, IL, USA).

2.1 Sample size determination

This was done using the method of Cochran and Snedecor (1974), as follows:

$$n = \frac{z^2 pq}{d^2}$$

Where $z=95\%$; confidence interval= 1.96

p =probability of event occurring, (taken as 17%, as reported level of knowledge of food labels in a previous study); $p=0.17$

$$q = 1 - p = 1 - 0.17 = 0.83$$

$d=0.05$ which is acceptable margin of error.

Therefore $n=316$

This was increased to 400 to take care of attrition and invalid data.

The researchers and trained research assistants went to the selected supermarkets on the stipulated day and continuously recruited adult shoppers until the stipulated number of respondents for each supermarket was achieved. They now walked through the supermarkets to complete the checklists in each supermarket. Only shoppers in the prepackaged food section of the supermarkets were included. Structured questionnaires were administered to thirty-six (36) shoppers across the selected supermarkets, giving a total of 324 respondents.

2.2 Research Instruments: Questionnaire

Section A: Socio Demographic Characteristics : Data collected include socio-demographic characteristics of the respondents such as gender, marital status, age, highest educational level attained, occupation and household size.

Section B: Nutritional Knowledge, Knowledge About Food Labels: Respondents were asked to give two examples of each of the classes of food to test their nutritional knowledge. This was rated as poor (0-4), good (5-8) and very good (9-12). Also, respondents were asked if they understood the nutritional information on the label, and what factor was responsible for their willingness to read food labels and were also required to state the most important factor considered in making a purchase .Each respondent had a knowledge score of between 1 to 12 , rated as follows; 1 to 4 -poor; 5 to 8 –good; 9 to 12-very good.

Section C: Attitude To Food Labels: respondents were asked, if they thought nutrition labels were of any use, and also if they thought reading food label was a waste of it, etc. Respondents had a positive opinion score ranging from 0 to 10, and graded as follows; 0 to 3 –poor; 4 to 6 good, and 7 to 10 very good.

Section D: Usage Or Not, Of Food Labels: Respondents were asked how often they read food labels, what they considered most in making a purchase including the following; cheap prize, has expiry date, has NAFDAC registration number, ETC. For those who never read food labels, they were asked to choose from 8 given reasons including the following; don't understand food labels, don't know where the food labels are, don't know what the purpose of food labels, time consuming, not necessary ETC.

Section E: Industry Practice Of Food Labeling In Supermarkets. To achieve this, all the 18 factors stipulated in the NAFDAC food labeling guidelines 2005 were checked for. Factors checked include, name, net contents, listing of nutrients, manufacturers information, prominent marking, date marking, storage condition, batch number, trade mark, registration number, nutritional information, directions for use, ETC. This was conducted in each of the supermarkets where questionnaires were distributed. About sixteen locally produced and matching (or as near match as possible) imported food items each, were used to check for all the NAFDAC-stipulated information that should be provided on every pre-packed food items to be sold in Nigeria. Both locally produced and matching imported pre-packaged food item were checked and scored and rated as poor, fair and good. According to their level of compliance in providing each NAFDAC-stipulated information on the food item.

2.3 Statistical Analysis

The data collected was analyzed using Statistical Package for Social Sciences (SPSS), version 20.0 (SPSS Inc. Chicago, IL, USA). The statistical significant level was set at $p < 0.05$. The categorical variable results are presented as frequency and its percentage. Inferential statistics was made using chi square.

Ethics approval: Ethical approval for the study was obtained from the Ethical Committee of Faculty of Basic Medical Sciences, College of Health Sciences, University of Uyo. In addition the purpose of the study was explained to prospective respondents, the confidentiality of the information they were to provide assured and they were not required to supply their names. They were free to opt out. Only those that gave their individual consent were recruited as respondents.

III. Results

3.1 Socio-Demographic Characteristics

Table 1 shows the relevant socio-demographic characteristics of the respondents. Most of the respondents were males (n=171, 53%), single (n=130, 40%) and highest level of education attained was tertiary (n=143, 44%).

3.2 Nutritional knowledge of food planners

The result shows that most of the respondents have good knowledge about nutrition; only 4% (female) and 3.4% (male) of the respondents have poor nutritional knowledge. Respondents with tertiary education (85%) have better nutritional knowledge than respondents with lower or no educational background. Also civil servants (52%) have better nutritional knowledge than respondents with other occupational status. At 95% confidence interval, there is a significant difference in nutritional knowledge when level of education and occupational status of the respondents is considered. However, there is no significant difference when gender and household size are weighed.

3.3 The Most Important Factor Considered In Purchase

This was also included to assess what drives the food choices of the respondents as this may affect their use of food labels. The most important factor considered by females (50, 15.4%) in purchase is relative low price of the food item while the males (60, 18.5%) consider the expiry date of the item as most important. There is a significant difference within this group. Both secondary school respondents (34, 10.4%) and those with no formal education consider the price of the item as most important while tertiary educated respondents (44, 13.6%) consider expiry date of the item as most important. The result shows a significant difference within this group. Also there is a significant difference in comparison of the occupational status of the respondents and the most important factor considered in purchase; expiry date is considered most important in purchase by civil servants (37, 11.4%) and students (17, 5.2%). Unemployed (28, 8.6%) and artisans (35, 10.8%) consider the price of the good as most important in purchase. The only respondents that consider health as most important in purchase are CEO/political office holder (9, 2.8%). There is no significant difference in household size and the most important factor considered in purchase. 3.4 Consumers' Opinion About Food Labels: Most respondents have very good opinion about food labels; 66% (20.4%) of females and 72 % (22.2%) of males. However, no significant difference is recorded. There is a significant difference in the level of education of the respondents and their opinion about food label. Tertiary educated respondents (67, 20.7%) have very good opinion and this is the highest percentage within the group. There is no significant difference when occupational status and household size of the respondents is compared.

3.5 Factors Influencing Willingness to Read Food Label by the Respondents

In assessing the reasons why reading of food label is not practiced every time, result showed that most of the respondents (female-68, 21%, male-76, 23.5%) do not read food label because it is time consuming. However there is no significant difference in this group. There is a significant difference between highest level of education obtained, occupational status and willingness to read food label. There is no significant difference when household size is considered with respect to this. The highest determining factor among these groups is time.

3.6 Industry practice of food labeling

The attitude of manufacturers of local food items towards provision of information on content, best before (expiry date), NAFDAC registration number and %RDA of their products is rated as 67% (n=6), 45% (n=4), 78% (n=7) and 22% (n=2) good respectively while for the imported goods, this is rated as 67% (n=6), 89% (n=8), 11% (n=1) and 78% (n=7) good respectively.

IV. Discussion

Apart from labels on food items, consumers can gain information about their food choices via family knowledge, media, advertisements and education. However, food labels are more efficient in provision of this information since it involves both nutrition label and health claims. Consumption of unhealthy food has been associated with many diseases leading to the incorporation of regulatory bodies by many countries (including Nigeria) to check the safety of prepackaged foods sold in the country.

One of the ways the safety of food items is checked is via nutrition labeling which informs the consumers of the content, expiry date, %RDA of the product. The regulatory body saddled with this task in Nigeria is NAFDAC. This ensures that both locally produced and imported goods are healthy and safe for consumption in Nigeria. Though many food producing industries in Nigeria has been registered by NAFDAC, it is necessary to find out if these labels are being used by consumers in making food choices, what limits the use of it and how to mitigate the problem for a healthier society at large. This formed the fulcrum of this research.

Nutritional knowledge is a vital tool in reading and comprehension of food labels. Studies in the past have shown that level of nutritional knowledge influence the use of food label in purchase [15,16]. Most of the respondents have good nutritional knowledge. This means that they understand the link between health and diet and also the health risks of their food choices. This will lead to positive attitude towards food labels in their food choices.

Various factors determine the food choices of consumers and varying degrees of importance is accorded to these factors. The significant difference observed when gender, highest level of education and occupational status of the respondents is compared shows that these socio-demographic factors play a vital role in food choices of consumers. Female respondents, respondents with secondary school/no formal education consider price of the food item as the most important factor. It can be inferred that they do not see the usefulness of reading food label since it does not hold the information considered in purchase. Male respondents and tertiary school respondents consider expiry date of the product as most important. This further means that they are willing to buy food item at any cost so long as they are comfortable with the expiry date leading to their usage of food labels. This is in agreement with previous findings that male gender reads food labels more often than females [17,18]. Furthermore, expiry date of products is reported to be the most important factor considered in purchase by university students [17] which is also recorded in this research.

Consumers' opinion about food label will definitely affect their willingness to inculcate information found on the food label in purchase. Most consumers have a positive opinion about food labels but there is a significant association between opinion of food labels and level of education of the consumers. Consumers with tertiary education view food labels as more important than consumers with primary school or no formal education. This is in conformity with the works of [15,16] who reported that consumers with higher level of education tend to be more effective at interpreting the information found on food label and use this information in their food choice. This is reasonable since educated people tend to have a more positive attitude towards reading. In a study of use of food labels in south east of Nigeria, Ofoegbu (2016) reported the following: 96.6% of self-reported use of labels among the respondents; noting that about half of them (52.7%) made use of food labels regularly in their food choices. The expiration date (45.7%) and nutrient information (36.1%) were the most considered information on labels of the product. The respondents considered information about the cholesterol/fat (48%) and sugar (38.6%) content of foods they are purchasing to be most important. Generally, the respondents had good knowledge and attitude. This (attitude) was significantly associated with nutrition knowledge and use of food labels. Marital status and educational status of the consumers also had a significant effect on their use of food labels.

Many consumers do not read food labels because it is time consuming while others do not read it either because they do not understand the label, cannot find where the label is or do not have the habit of doing so. A few consumers claim to read food labels every time they make a purchase. According to [8], the time available for shopping may be a determining factor in reading of food label by shoppers. This is further supported by the findings in this research; most employed people do not read food label because it is time consuming.

Most local food items are duly registered by NAFDAC but information on expiry date and %RDA is lacking. This has negative implications on health because consumers may be exposed to expired products and consumption of food items in excess quantities; leading to diet related illnesses. The imported food items however are very efficient in provision of the expiry date of their products. These food items however are not registered by NAFDAC which is very necessary to ensure that they are safe for consumption in Nigeria.

V. Conclusion

The importance of nutrition labeling cannot be over emphasized. This study assessed the view of consumers in Akwa Ibom State, Nigeria towards food label. Findings from this research infer that most consumers have sound nutritional knowledge. The educated consumers have a positive view of food labels unlike those with little or no formal education. Furthermore most employed consumers do not read food labels due to lack of time and the uneducated either do not understand the information found on the label or do not see the need to do so. Even though Nigerian food items are registered by NAFDAC, these foods do not have expiry date and %RDA on them unlike the imported food items which even though properly labeled do not have NAFDAC registration number.

Therefore, it is recommended that government and non-government agencies take education about the importance of food label to the grass root. This is to ensure that consumers see the need to read food labels. Also NAFDAC should ensure that even the registered food items have proper labeling that includes the expiry date of their products. This will help lead to a healthier society and country at large. Also, NAFDAC should ensure that companies use words that can be easily understood in the labeling of food items as this will go a long way to helping the uneducated. Governments should ensure that any food item that is not duly registered is not allowed into the country as this will help to curb importation excesses.

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Table 1: Socio-demographic Characteristics of Respondents

	Female n(%)	Male n(%)	Total n(%)	Test Statistics	P Value	
Highest primary Education Obtained	13 (4)	16 (4.9)	29 (9)	6.191	0.103	
	secondary	57 (17.6)	47 (14.5)			104 (32.1)
	tertiary	67 (20.7)	76 (23.5)			143 (44.1)
	no formal education	16 (4.9)	32 (9.9)			48 (14.8)
	total	153 (47.2)	171 (52.8)			324 (100)
Occupational Status	47 (14.5)	48 (14.8)	95 (29.3)	2.657	0.617	
	civil servant	32 (9.9)	35 (10.8)			67 (20.7)
	unemployed	39 (12)	46 (14.2)			85 (26.2)
	Artisan	28 (8.6)	27 (8.3)			55 (17)
	Student	7 (2.2)	15 (4.6)			22 (6.8)
	CEO/political office holder	153 (47.2)	171 (52.8)			324 (100)
Age	26 (8)	28 (8.6)	54 (16.7)	9.583	0.022	
	< 20	59 (18.2)	46 (14.2)			105 (32.4)
	20-35	43 (13.3)	75 (23.1)			118 (36.4)
	36-51	25 (7.7)	22 (6.8)			47 (14.5)
	Above 51	153 (47.2)	171 (52.8)			324 (100)
Marital	65 (20.1)	65 (20.1)	130 (40.1)	7.700	0.053	
	single					

Status	married	52 (16)	70 (21.6)	122 (37.7)		
	Divorced	18 (5.6)	28 (8.6)	46 (14.2)		
	Widowed	18 (5.6)	8 (2.5)	26 (8)		
	Total	153 (47.2)	171 (52.8)	324 (100)		
Household Size	1-4	63 (19.4)	58 (17.9)	121 (37.3)	3.552	0.314
	5-7	50 (15.4)	69 (21.3)	119 (36.7)		
	Above 7	40 (12.3)	44 (13.6)	84 (25.9)		
	Total	153 (47.2)	171 (52.8)	324 (100)		

Table 2: Distribution of respondents by gender and interaction with food labels.

		Female	Male	Total	Test Statistics	P Value
Nutritional knowledge of respondents	Poor	13 (4%)	11 (3.4%)	24 (7.4%)	$X^2 = 0.525$	p>0.05
	Good	73 (22.5%)	82 (25.3%)	155 (47.8%)		
	Very good	67 (20.7%)	78 (24.1%)	145 (44.8%)		
	Total	153 (47.2%)	171 (52.8%)	324 (100%)		
Most important Factor Considered in Purchase	RLP	50 (15.4%)	41 (12.7%)	91 (28.1%)	Linear by linear association = 4.480	P<0.05
	Taste	21 (6.5%)	25 (7.7%)	46 (14.2%)		
	Health	28 (8.6%)	23 (7.1%)	51 (15.7%)		
	Safety	14 (4.3%)	22 (6.8%)	36 (11.1%)		
	Expiry date	40 (12.3%)	60 (18.5%)	100 (30.9%)		
	Total	153 (47.2%)	171 (52.8%)	324 (100%)		
Attitude towards Food labels	poor	50 (15.4%)	55 (17.0%)	105 (32.4%)	$X^2 = 0.104$	p>0.05
	good	37 (11.4%)	44 (13.6%)	81 (25.0%)		
	Very good	66 (20.4%)	72 (22.2%)	138 (42.6)		
	Total	153 (47.2%)	171 (52.8%)	324 (100%)		
Factors influencing Willingness to Read food labels	TC	68 (21.0%)	76 (23.5%)	144 (44.4%)	$X^2 = 9.036$	p>0.05
	DU	20 (6.2%)	15 (4.6%)	35 (10.8%)		
	CFL	7 (2.2%)	11 (3.4%)	18 (5.6%)		
	DH	29 (9.0%)	21 (6.5%)	50 (15.4%)		
	NN	9 (2.8%)	23 (7.1%)	32 (9.9%)		
	NAP	20 (6.2%)	25 (7.7%)	45 (13.9%)		
	Total	153 (47.2%)	171 (52.8%)	324 (100%)		

- RLP-relatively low price
- TC-time consuming
- DU-I do not understand it
- CFL-cannot find where the label is
- DH-I do not have the habit
- NN-there is no need to do so
- NAP-not applicable

Table 3: Distribution of respondents by highest level of education attained and interaction with food labels.

		Primary	Secondary	Tertiary	No Formal Education	Total	Test Statistics	P Value
Nutritional knowledge of respondents	Poor	4 (1.2%)	7 (2.2%)	6 (1.9%)	7 (2.2%)	24 (7.4%)	$X^2 = 27.721$	P<0.05
	Good	14 (4.3%)	64 (19.8%)	52 (16.0%)	25 (7.7%)	155 (47.8%)		
	Very good	11 (3.4%)	33 (10.2%)	85 (26.2%)	16 (4.9%)	145 (44.8%)		
	Total	29 (9.0%)	104 (32.1%)	143 (44.1%)	48 (14.8%)	324 (100%)		
Most important Factor Considered in Purchase	RLP	7 (2.2%)	34 (10.5%)	25 (7.7%)	25 (7.7%)	91 (28.1%)	$X^2 = 44.710$	P<0.05
	Taste	7 (2.2%)	19 (5.9%)	17 (5.2%)	3 (0.9%)	46 (14.2%)		
	Health	3 (0.9%)	11 (3.4%)	34 (10.5%)	3 (0.9%)	51 (15.7%)		
	Safety	1 (0.3%)	12 (3.7%)	23 (7.1%)	0 (0%)	36 (11.1%)		
	Expiry date	11 (3.4%)	28 (8.6%)	44 (13.6%)	17 (5.2%)	100 (30.9%)		
	Total	29 (9%)	104 (32.1%)	143 (44.1%)	48 (14.8%)	324 (100%)		
Opinion about Food labels	poor	13 (4.0%)	34 (10.5%)	34 (10.5%)	24 (7.4%)	105 (32.4%)	$X^2 = 22.970$	P<0.05
	good	9 (2.8%)	17 (5.2%)	42 (13.0%)	13 (4.0%)	81 (25.0%)		
	Very good	7 (2.2%)	53 (16.4%)	67 (20.7%)	11 (3.4%)	138		

	Total	29 (9.0%)	104 (32.1%)	143 (44.1%)	48 (14.8%)	324 (100%)		
Factors influencing Willingness to Read food labels NN	TC	13 (4.0%)	45 (13.9%)	62 (19.1%)	24 (7.4%)	144 (44.4%)	X ² = 40.775	P<0.05
	DU	5 (1.5%)	15 (4.6%)	6 (1.9%)	9 (2.8%)	35 (10.8%)		
	CFL	3 (0.9%)	7 (2.2%)	4 (1.2%)	4 (1.2%)	18 (5.6%)		
	DH	5 (1.5%)	18 (5.6%)	21 (6.5%)	6 (1.9%)	50 (15.4%)		
		2 (0.6%)	12 (3.7%)	14 (4.3%)	4 (1.2%)	32 (9.9%)		
		1 (0.3%)	7 (2.2%)	36 (11.1%)	1 (0.3%)	45 (13.9%)		
	NAP	29 (9.0%)	104 (32.1%)	143 (44.1%)	48 (14.8%)	324 (100%)		
Total								

RLP-relatively low price
 TC-time consuming
 DU-I do not understand it
 CFL-cannot find where the label is
 DH-I do not have the habit
 NN-there is no need to do so
 NAP-not applicable

Table4: Distribution of respondents by occupational status and interaction with food labels.

Nutritional Knowledge of respondents	Civil servant	unemployed	artisan	Student	CEO/ political office holder	Total	Test statistics	P value
Poor	5 (1.5%)	7 (2.2%)	7 (2.2%)	5 (1.5%)	0 (0%)	24 (7.4%)	X ² = 34.415	P<0.05
	38 (11.7%)	42 (13.0%)	50 (15.4%)	22 (6.8%)	3 (0.9%)	155 (47.8%)		
	52 (16.0%)	18 (5.6%)	28 (8.6%)	28 (8.6%)	19 (5.9%)	145 (44.8%)		
	95 (29.3%)	67 (20.7%)	85 (26.2%)	55 (17.0%)	22 (6.8%)	324 (100%)		
Most important RLP Factor Considered in purchase	taste	21 (6.5%)	28 (8.6%)	35 (10.8%)	7 (2.2%)	0 (0%)	X ² = 53.188	P<0.05
	Health	11 (3.4%)	5 (1.5%)	12 (3.7%)	14 (4.3%)	4 (1.2%)		
	Safety	19 (5.9%)	7 (2.2%)	9 (2.8%)	7 (2.2%)	9 (2.8%)		
	Expiry date	7 (2.2%)	7 (2.2%)	7 (2.2%)	10 (3.1%)	5 (1.5%)		
		37 (11.4%)	20 (6.2%)	22 (6.8%)	17 (5.2%)	4 (1.2%)		
	Total	95 (29.3%)	67 (20.7%)	85 (26.2%)	55 (17.0%)	22 (6.8%)		
Opinion about Food labels	poor	34 (7.4%)	28 (8.6%)	31 (9.6%)	19 (5.9%)	3 (0.9%)	X ² = 13.133	P>0.05
	good	29 (9.0%)	10 (3.1%)	23 (7.1%)	11 (3.4%)	8 (2.5%)		
	Very good	42 (13.0%)	29 (9.0%)	31 (9.6%)	25 (7.7%)	11 (3.4%)		
	Total	95 (29.3%)	67 (20.7%)	85 (26.2%)	55 (17.0%)	22 (6.8%)		
Factors influencing Willingness to Read food labels NN	TC	41 (12.7%)	34 (10.5%)	39 (12.0%)	24 (7.4%)	6 (1.9%)	X ² = 47.676	P<0.05
	DU	3 (0.9%)	11 (3.4%)	13 (4.0%)	7 (2.2%)	1 (0.3%)		
	CFL	4 (1.2%)	7 (2.2%)	4 (1.2%)	3(0.9%)	0 (0%)		
	DH	18 (5.6%)	4 (1.2%)	16 (4.9%)	10 (3.1%)	2 (0.6%)		
		10 (3.1%)	7 (2.2%)	7 (2.2%)	5 (1.5%)	3 (0.9%)		
		19 (5.1%)	74(1.2%)	6(1.9%)	6 (1.9%)	10 (3.1%)		
	NAP	95 (29.3%)	67 (20.7%)	85 (26.2%)	55 (17.0%)	22 (6.8%)		
Total								

RLP-relatively low price
 TC-time consuming
 DU-I do not understand it
 CFL-cannot find where the label is

DH-I do not have the habit
 NN-there is no need to do so
 NAP-not applicable

Table 5: Distribution of respondents by household size and interaction with food labels.

		1-4	5-7	Above 7	Total	Test Statistics	P Value
Nutritional knowledge of respondents	poor	10 (3.1%)	5 (1.5%)	9 (2.8%)	24 (7.4%)	X ² = 6.423	p>0.05
	good	63 (19.4%)	56 (17.3%)	36(11.1%)	155 (47.8%)		
	very good	48 (14.8%)	58 (17.9%)	39(12.0%)	145 (44.8%)		
	Total	121 (37.3%)	119 (36.7%)	84(25.9%)	324 (100%)		
Most important Factor Considered In purchase	RLP taste	29 (9.0%)	35 (10.8%)	27(8.3%)	91 (28.1%)	X ² = 10.781	P>0.05
	Health Safety	16 (4.9%)	16 (4.9%)	14(4.3%)	46 (14.2%)		
	Expiry date	26 (8.0%)	15 (4.6%)	10(3.1%)	51 (15.7%)		
	Total	17 (5.2%)	12 (3.7%)	7(2.2%)	36 (11.1%)		
	Total	33 (10.2%)	41 (12.7%)	26(8.0%)	100 (30.9%)		
Opinion about Food labels	poor	35 (10.8%)	43 (13.3%)	27 (8.3%)	105 (32.4%)	X ² = 6.421	p>0.05
	good	26 (8.0%)	31 (9.6%)	24 (7.4%)	81 (25.0%)		
	Very good	60 (18.5%)	45 (13.9%)	33(10.2%)	138 (42.6)		
	Total	121 (37.3%)	119 (36.7%)	84(25.9%)	324 (100%)		
Factors influencing Willingness to Read food labels	TC	53 (16.4%)	48 (14.8%)	43(13.3%)	144 (44.4%)	X ² = 9.063	p>0.05
	DU	16 (4.9%)	11 (3.4%)	8(2.5%)	35 (10.8%)		
	CFL	8 (2.5%)	6 (1.9%)	4(1.2%)	18 (5.6%)		
	DH	17 (5.2%)	23 (7.1%)	10(3.1%)	50 (15.4%)		
	NN	8 (2.5%)	16 (4.9%)	8(2.5%)	32 (9.9%)		
	NAP	19 (5.9%)	15 (4.6%)	11(3.4%)	45 (13.9%)		
	Total	121 (37.3%)	119 (36.7%)	83(25.6%)	324 (100%)		

RLP-relatively low price
 TC-time consuming
 DU-I do not understand it
 CFL-cannot find where the label is
 DH-I do not have the habit
 NN-there is no need to do so
 NAP-not applicable

Table 6: Industry Practice of Food Labelling on Locally Produced and Imported Food Items

NAFDAC Components		Imported Food Items n/ (%)	Local Food Items n/ (%)
Name of Food Item	absent	-	-
	incomplete	-	-
	complete	16 (100)	16 (100)
	total	16 (100)	16 (100)
List of Ingredients	absent	-	-
	incomplete	1 (6.3)	6 (37.5)
	Complete	15 (93.8)	10 (62.5)
	total	16 (100)	16 (100)
Net Content	absent	-	-
	incomplete	-	2 (12.5)
	Complete	16 (100)	14 (87.5)
	total	16(100)	16 (100)
Name and Address of the Manufacturer	absent	-	-
	incomplete	-	1 (6.3)
	complete	16 (100)	15 (93.8)
	total	16 (100)	16 (100)
Clear and Prominent Marking	absent	-	-
	incomplete	-	1 (6.3)
	complete	16 (100)	15 (93.8)
	total	16 (100)	16 (100)
Date Marking	absent	-	-
	incomplete	-	2 (12.5)
	Complete	16 (100)	14 (87.5)
	total	16 (100)	16 (100)
Storage Condition	absent	-	-
	incomplete	-	3 (18.8)
	Complete	16 (100)	13 (81.3)
	total	16 (100)	16 (100)
Batch Number	absent	-	-
	incomplete	2 (12.5)	-

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	Complete	14 (87.5)	16 (100)
	total	16 (100)	16 (100)
Trade Mark	absent	-	-
	incomplete	1 (6.3)	-
	Complete	15 (93.8)	16 (100)
	total	16 (100)	16 (100)
Registration Number	absent	-	-
	incomplete	4 (25)	-
	Complete	12 (75)	16 (100)
	total	16 (100)	16 (100)
Language	absent	-	-
	Incomplete	-	-
	Complete	16 (100)	16 (100)
	total	16 (100)	16 (100)
Particulars of Physical Condition Treatment	absent	-	-
	incomplete	1 (6.3)	3 (18.8)
	complete	15 (93.8)	13 (81.3)
	total	16 (100)	16 (100)
Ionizing Radiation	absent	-	-
	incomplete	1 (6.3)	3 (18.8)
	Complete	15 (93.8)	13 (81.3)
	total	16 (100)	16 (100)
Frozen Food	absent	-	-
	incomplete	-	2 (12.5)
	Complete	16 (100)	14 (87.5)
	total	16 (100)	16 (100)
Direction For Use	absent	-	-
	incomplete	-	1 (6.3)
	complete	16 (100)	15 (93.8)
	total	16 (100)	16 (100)
Nutritional Labeling	absent	-	-
	incomplete	1 (6.3)	2 (12.5)
	Complete	15 (93.8)	14 (87.5)
	total	16 (100)	16 (100)
Grade Designation	absent	-	-
	incomplete	-	3 (18.8)
	Complete	16 (100)	13 (81.3)
	total	16 (100)	16 (100)
Display Of Information	absent	-	-
	incomplete	-	1 (6.3)
	complete	16 (100)	15 (93.8)
	total	16 (100)	16 (100)