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Nutrition education positively influenced the use of food labels on pre-packaged foods and purchase decision among young people in Obafemi Awolowo University Community, Nigeria

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Abstract

Rate at which young people consume Pre-Packaged Food (PPF) products is on the increase in Obafemi Awolowo University Community, Nigeria. This study was conducted to evaluate the impact of nutrition education on the use of food labels on PPF and purchase decision among young people in the Community. Data were collected using questionnaire before and after intervention. Two thousand students participated in the nutrition education intervention programme, while only 10% of the participants were interviewed before and after the programme. Information on demographic characteristics, awareness and use of Pre-Packaged Food Labels (PPFL) was obtained. Data were analyzed using both descriptive and inferential statistics. Data showed that mean age of the participants was 22.12±2.9years and 64.5% were female. Majority (80.0%) were aware of PPFL while 27% were rated high in awareness of the content of PPFL. Specifically 36.9% read nutrition information on the label and vitamins and minerals were the most sought information (31.0%) while sodium was the least (4.0%). More than half indicated that they read labels before purchase of PPF and 47.5% claimed PPFL influenced their purchase decision. Nutrition information on the label ranked second after price among the determinants to purchase a PPF product. There was no significant relationship between level of awareness and purchase decision before the nutrition education intervention (p=0.208) while significant relationship existed after intervention (p=0.003). After the intervention, females were four times more likely to use food labels in purchase decision than males (OR =4.34, 95% CI (0.62-2.75), likewise, older participants were thrice more likely to use food labels in purchase decision (OR = 3.05, 95% CI = 1.49 - 2.64) than the younger ones. Nutrition education positively influenced the use of PPFL on purchase decision of PPF products in the University community.

Keywords: Pre-packed foods, Food label, Nutritional information, Nutrition education

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Introduction

Consumers have become increasingly concerned about their health and general well-being since natural food is increasingly being replaced with processed foods. To make a food product unique and distinctive, firms spend more money and time on packaging more than advertisement because packaging is mostly the utmost distinguished marketing element (Krueger and Dickson, 1994). According to Héroux *et al.*, (1988) and Osei *et al.*, (2012), marketers as well as manufacturers spend considerable time and substantial amount of money on packaging products in a manner that will attract consumer's attention and enhance the product

consumption. In addition, Oghojafor *et al.*, (2012) found that product information serves to create awareness and product knowledge; simplifies purchases in the market place; helps consumers to drop many brands from consideration, and equally helps consumers to make informed choice.

Food labels have now become a popular policy tool, they are found to be very important public health tools that are used to promote adequate diet; and hence enhance public health and wellbeing. Food label is any tag, brand, mark, pictorial or any descriptive matter written, printed, stenciled, marked, embossed or impressed on, or attached to a container of food or displayed near food for the purpose of promoting its sale. The information may include name of the food, ingredients used in its manufacture, nutritional composition, manufacture and expiry dates, recommended storage conditions, instructions for use etc. This information assists consumers to better understand the nutritional value of food and enables them to compare with similar food products and to make healthy informed food (Al – Tamimi *et al.*, 2004).

Nutritional composition is a major component of PPFL, which is referred to as Nutritional labeling. It is the profiling of a product's content of nutrients including protein, fat, carbohydrates and vitamins and energy value. Studies on nutrition labeling has been conducted in some countries; South Africa (Sunelle *et al.*, (2010), Australia and New Zealand (Donna-Peterson *et al.*, 2001), Lesotho (Mahgoub *et al.*, 2007), Bultimore and Chicago (Borra, 2006), and UK (Grunert and Wills, 2007). Other studies by (Drichoutis *et al.*, 2008; Mhurchu and Gorton, 2007; Feunekes *et al.*, 2008) showed nutrition labels as one of the major instruments in helping people make better food purchase decisions and adopt healthier eating patterns.

Globally, developed countries have developed mandatory nutrition labelling, while developing countries especially Africa have voluntary nutrition labelling policy or none at all (Fig.1).

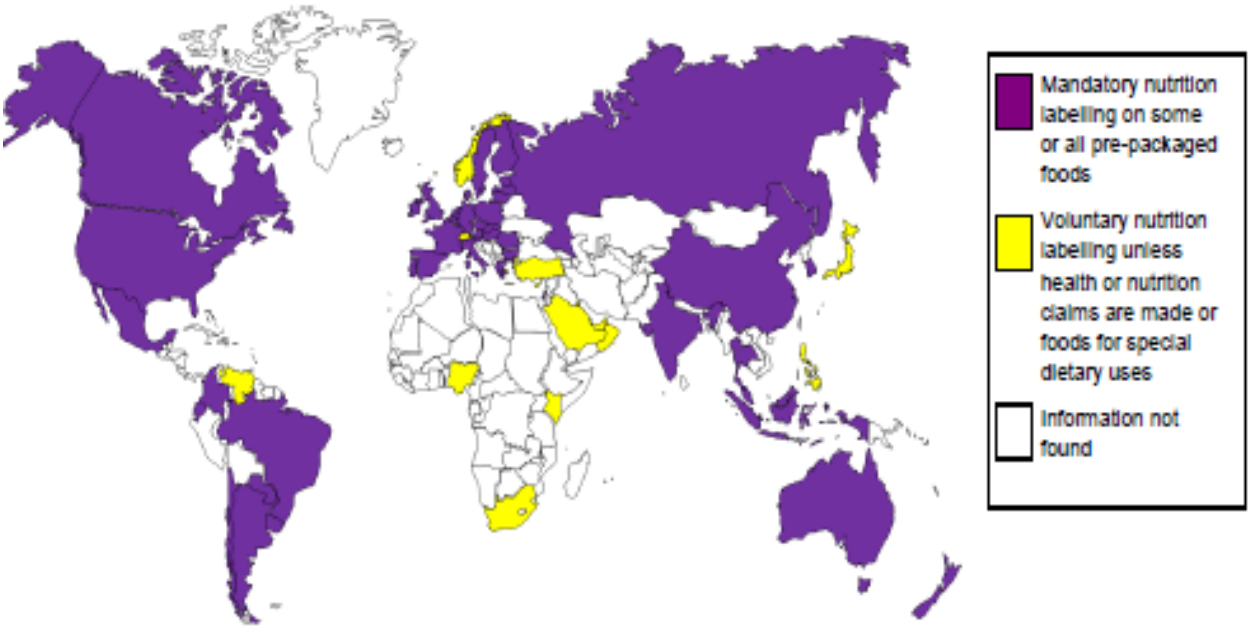

Fig. 1: Global Update on Nutrition Labelling, 2014

In Nigeria, the National Agency for Food and Drug Administration and Control (NAFDAC) is the regulatory body responsible for the regulation and control of food product manufacturing, importation, exportation, advertisement, sale and distribution in Nigeria. NAFDAC regulations require food labeling to be informative and accurate and not fraudulent or misleading.

The practice of reading and using food labeling information in purchasing PPF is very important. Unfortunately, in most of our communities, people are not used to reading food labels. This often leads to the purchase of expired packaged foods, purchase of large quantities of foods on sale while having very short shelf life or very near expiry dates as well as purchase of foods with ingredients that one is allergic to or need to avoid due to health challenge or religious beliefs. Therefore this study aimed at investigating the awareness and use of PPFL and the influence on purchase decision among young people in Obafemi Awolowo University Community.

Materials and Methods

Study area: The survey was conducted in Obafemi Awolowo University which is a comprehensive public institution established in 1962 as the university of Ife. The university is situated on a vast expense of land totaling 11,861 hectares in Ile-Ife, Osun state southwest of Nigeria. The university comprises the central campus, the students' residential area, the staff quarters and a Teaching and Research Farm. The central campus comprises the academic, administrative unit and service centers. The students' residential areas are made up of 10 undergraduates' hostels and a postgraduate hall of residence, many shops and restaurants are located there. The university has 13 faculties and 2 colleges, the postgraduate college and the college of health sciences; it has 82 departments with about 35000 total numbers of students.

Study design: The study design used was analytical using descriptive and survey design. The design was selected because it allowed analysis of factors influencing the use of food label information in purchasing pre-packaged foods.

Sample size /procedure: The respondents for the study were non-science students, who purchased and used PPF bought from the food retail centers located in and out of the school campus. Random sampling was used to select 200 out of about 2,000 students who registered and did a special elective course on Agriculture with nutrition component.

Research instrument and data collection: The instrument used in the collection of data was a structured questionnaire. Questionnaire containing both open ended and close ended questions was used to collect information on social demographic characteristics of respondents and awareness of food label information and use of food labels before and after the lectures.

Data analysis: Data were analyzed using descriptive statistics such as frequency, percentages, means and standard deviations and inferential statistics like correlation analysis and logistic regression. Significant value was taken at $p \leq 0.05$. Data were entered into a computer database using SPSS VERSION 20 computer software.

Results and Discussion

Table 1 revealed that there were more female (64.5%) than male, about 13.5% were adolescents (≤19years) and majority (76.5%) fell within the age range of 20-25years with mean age of 22.12±2.9 while 78.5% and 95.0% lived in school hostels and were single respectively.

Data in Table 2 showed that 80% of the respondents were aware of food labels on pre-packaged foods and most commonly sought information was expiry date (32.0%) and least sought was instruction for use (4.5%). Majority (74.5%) of the students agreed that information on food label is very important.

Out of those who were aware of food labels on PPF, 88.0% claimed they did read and 39.8% indicated that they always did. Some were motivated to read food label out of

curiosity about new product (30.8%) while only 36.9% read for nutrient composition information. One of the reasons why students did not always read the labels is the technicality of the terminology used which was indicated by half of the students (Table 3), however 54.4% indicated that they did read before purchase of any PPF products.

Table 1: Demographic characteristics of respondents

Variables	No	Percent
Sex		
Male	71	35.5
Female	129	64.5
Age(years)		
<19	27	13.5
20-25	153	76.5
26-30	14	7.0
>30	6	3.0
Residential area		
School hostels	157	78.5
Off campus	43	21.5
Marital status		
Single	190	95.0
Married	10	5.0

Table 2:**Pre-packaged food label information**

Variable	N	%
Food label awareness		
Yes	160	80
No	40	20
Terms sought on Food Label		
List of ingredients	18	9.0
Net content	13	6.5
Name of the manufacturer	13	6.5
Country of origin	15	7.5
Batch/lot identification	23	11.5
Manufacture date	18	9.0
Expiry date	64	32.0
Storage condition	14	7.0
Nutrition information	13	6.5
Instructions for use	9	4.5
Importance of food label information		
Very important	149	74.5
Somewhat important	37	18.5
Minimally important	11	5.5
Not important	3	1.5

Table 4. Reading and understanding of the pre-packaged food label information

Variable	No	%
Do you read nutritional label		
Yes	176	88.0
No	24	12.0
Frequency of reading		
Always	70	39.8
Sometimes	90	51.1
Rarely	16	9.1
Motivation for reading		
fancy packaging	42	21.5
curiosity about a new product	60	30.8
product comparison	21	10.8
nutrients composition	72	36.9
Understand information provided		
Yes	158	79.0
No	42	21.0
Difficulties in reading and understanding label		
print is too small	64	32
technical terms	99	49.5
overwhelmed or confused by too much information	37	18.5
Reading label before purchase of item		
Yes	109	54.5
No	91	45.5

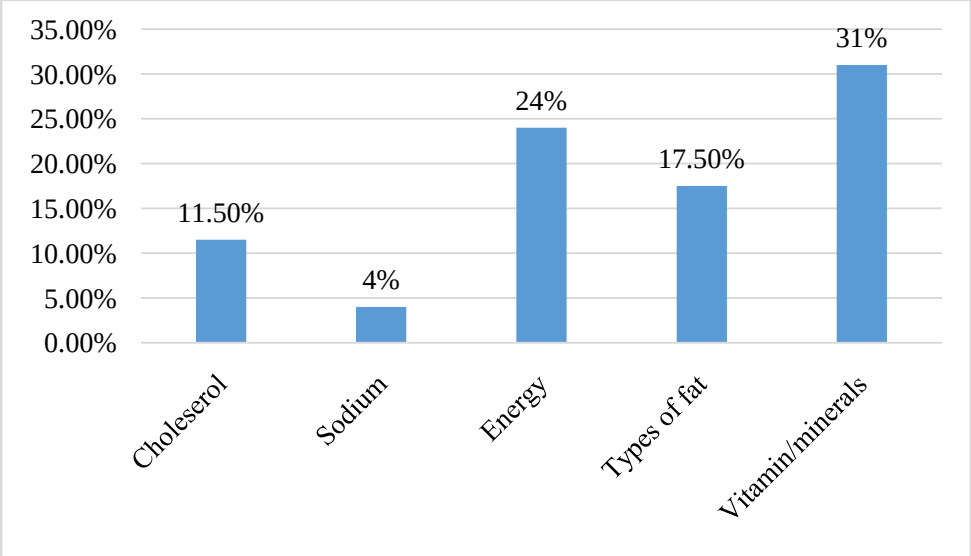

Fig.1: Nutrients commonly sought in PPFL

Table 5: Effect of PPFL on purchase decision (Source: field survey, 2016)

Variable	No	%
Effects of labels on purchase decision		
Influence the choice of brand	74	37.0
Influence repurchase decision	95	47.5
Increase desire/need to purchase	31	15.5
Motivation to buy a particular PPF		
Price	72	36.0
Nutrition information	59	29.5
Habits	17	8.5
Brand name	27	13.5
Appearance	12	6.0
No reason	13	6.5

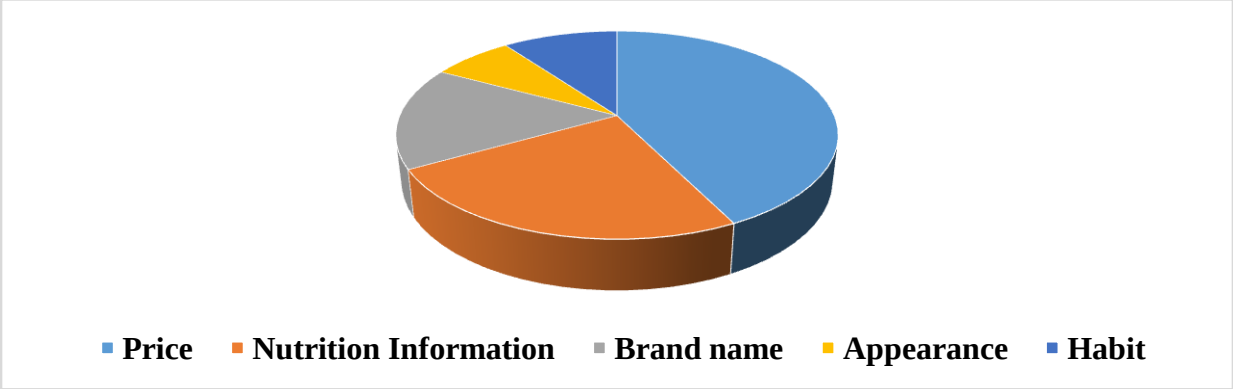

Fig. 2: Motivation to buy PPF

Table 6: Level of awareness before and after nutrition education intervention

Variables	Before		After	
level of awareness of respondents	**No. (%)**	**p-value**	**No (%)**	**p-value**
High level of awareness (7-10 items)	54 (27.0)	0.208	92 (46.0)	0.003*
Middle level of awareness (4-6 items)	56 (28.0)		74 (37.0)	
Low level of awareness (1-3 items)	90 (45.0)		34 (17.0)	

Source: field survey, 2016 * Significant at ≤0.005

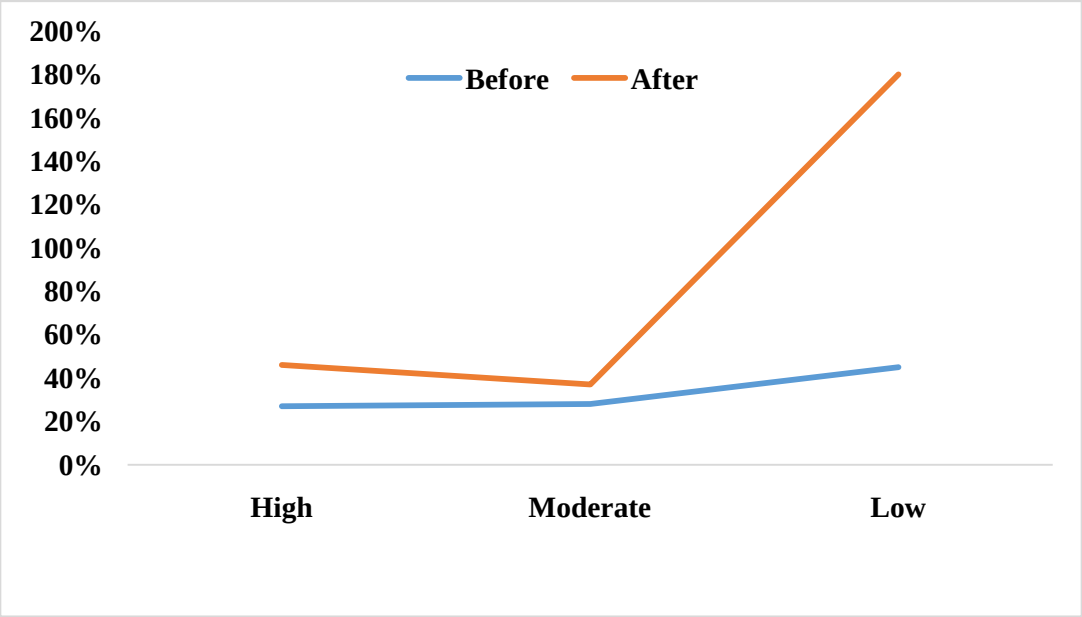

Fig. 3: Level of awareness before and after nutrition education intervention on use of PPFL

Table 7: Multivariate analysis of factors associated with use of PPFL before and after nutrition education intervention

Variables	No (%)	OR (95% CI) Before	p-value	OR (95% CI) After	p-value
Sex					
Male (ref)	71 (35.5)	1.0		1.0	
Female	129 (64.5%)	0.87 (0.41-1.52)	1.641	4.23 (0.62-2.75)	0.001*
Age(years)					
<19 (ref)	27 (13.5)	1.0		1.0	
20-25	153 (76.5)	0.78 (0.52-4.12)	0.483	0.92 (0.57-1.81)	0.003*
≥26	20 (10.0)	0.81 (0.59-1.80)		3.05 (1.49-2.64)	
Religion					
Christianity (ref)	172 (86.0)	1.0		1.0	
Islamic	27 (13.5)	0.04 (0.45-1.47)	0.992	1.02 (0.57-1.81)	0.924
Traditional	1 (0.5)	0.01 (0.61-1.35)		0.45 (0.44-1.36)	
Ethnic group					
Yoruba (ref)	166 (83.0)	1.0		1.0	
Hausa	7 (3.5)	0.58 (0.43-0.78)			
Igbo	17 (8.5)	0.86 (0.67-1.09)	1.762	1.02 (0.88-1.19)	0.789
Others	10 (5.0)	0.71 (0.11-1.52)		0.70 (0.11-1.32)	
Residential area					
School hostels (ref)	157 (78.5)	1.0		1.0	
Off campus	43 (21.5)	1.03 (0.58-1.79)	0.631	1.28 (0.45-3.65)	0.076
Marital status					
Single (ref)	190 (95.0)	1.0		1.0	
Married	10 (5.0)	0.77 (0.53-1.55)	0.679	1.02 (0.58-1.79)	0.09

The information students sought under nutrition information on the label was also investigated; 31.0% sought for vitamins and minerals contents of the product while sodium was the least concerned (4.0%) (Fig. 2).

Whether or not information on PPFL influenced purchase decision of any product was investigated and 47.5% reported in affirmation (Table 4). Data in Fig. 3, however showed that price was a determinant in the purchase of a product followed by nutrition information.

Data in Table 5 and Fig. 4 showed that the level of awareness on use of PPFL improved after nutrition education intervention. There was no significant relationship between level of awareness and purchase decision before intervention (p=0.208) while significant relationship existed after intervention (p=0.003). After the nutrition education intervention, the logistic regression in Table 7 indicated that older participants were thrice more likely to use food labels in purchase decision (OR = 3.05, 95% CI = 1.49 - 2.64) than the younger ones. There was no difference before intervention.

This study was conducted to find out the use of pre-packaged food labels by university undergraduates. An intervention programme was put in place in form of a nutrition special elective course open to all students. It was found out that more females enrolled for the course compared to men. This indicated that women are more likely to seek health and nutrition related information than men, this is in agreement with studies conducted by Stefan, (2015), Bidmon and Terlutter, (2015), Pollard *et al.,* (2015), and Regitz-Zagrosek, (2012).

Seeking nutrition information is more common among older people and individuals with chronic diseases since they check for specific nutrients, and use nutrition information on food labels more often than did individuals without such diseases.The people who have health challenges are always conscious of their food intake and this could be responsible for the awareness of information and use on food labels (Hong *et al.,* 2014; Roberto and Khandpur 2014; Wojcicki and Heyman, 2012; Lewis *et al.,* 2009). In this current study, since the university students were basically young people without noticeable health challenges, single and resided in university hostels, about one-fourth of the respondents scored high in the level of awareness of food labels even though majority said the use of food labels is very important but about half said they read food labels before buying any pre-packaged food.

One third of the undergraduates indicated that, search for nutritional information motivated them to read food label though they had difficulties in understanding the technical terms used at times. This was also reported in the study of Donna Peterson *et al.,* (2001), which revealed that use of technical/scientific language on food labels situated barrier to consumers in reading and understanding labeling information when deciding to purchase pre-packaged foods in Australia and New Zealand. Even though half of the respondents read label before purchasing items, many still have the habit of being loyal to brand names. Those who did not read labels gave reasons such as lack of time, too hungry/thirsty to read label, claimed that they already know the nutrition in food so, there is no need of reading, and technical terms used on label too difficult to understand.

Most common sought information on pre-packaged food labels was the expiry date. This indicated their concern about risks that might occur from consuming expired foods. The same was also reported in the South Africa (Sunelle *et al.,* 2010), Australia and New Zealand (Donna *et al.,* 2001) and in the UK. However, the trend was slightly different with what information consumers sought on food labels in Australia and New Zealand, whereby brand name of a pre-packaged food was highly considered followed by price and then ingredients and expiry date was the least. This could be as a result of strict code of conducts in such countries on shelved items. The general believe is that expired products are rarely found on the shelf in developed countries.

Among those that sought nutrition information, very few sought for the cholesterol, sodium and energy contents, type of fat. Vitamins/minerals contents is the most sought on pre-packaged foods labels.

In this study, price remained the highest motivator for purchase of pre-packaged food. Label also influenced the choice of brand, repurchase decision and increase in desire/need to purchase a product. This finding is in variance with the report by Mahgoub *et al.*, (2007) where nutrition information on food labels is reported to be the main food purchasing motivator of consumers.

There was no correlation between the level of awareness on nutritional information and its effect on their purchase decision. It shows that there is no significant relationship between level of awareness and purchase decision at 0.05 levels of significance. Study among students at UiTM Puncak Alam, Selangor, Malaysia also reported the same finding in year 2011 and 2012.

Conclusion

The undergraduates in the study area were better informed on the importance of use of food labels after the nutrition intervention. Price should not be the main reason for buying a product but nutritional components. This has implication on what they eat and effect on their health in later years. Females are the main determinant of the kind of food introduced and given to the family, therefore, they should be more informed and coupled with the fact that, a lot of women are now in paid jobs outside the home, this impacts on the time they spend in preparing food, hence, the choice of packaged food. Knowing the nutritional components of the prepackaged food should be of paramount importance.

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