Preliminary Studies on Status of Nutrition Labeling of Pre-Packaged Food Products in Markets of Lagos Metropolis in Nigeria

[1,2]Ogunmoyela Olugbenga A. B.*, [1]Akinroye Kingsley Kola, [1]Atinmo Tola and [1]Adeyemi Isaac A.

[1]*Nigerian Heart Foundation, Akanbi Danmola Street, Off Ribadu Rd, SW Ikoyi, Lagos, Nigeria*
[2]*Consumer Advocacy for Food Safety and Nutrition Initiative (CAFSANI), 7th Floor, Mulliner Towers, 39 Osborne Road, Ikoyi, Lagos, Nigeria*

***Corresponding Author:** gbenga.moyela2001@gmail.com; info@cafsani.org*

ABSTRACT

Background: *Nutrition labelling regulations have been in use in various countries since the United States Food and Drug Administration published its first regulations in 1973. The Pre-packaged Food Labelling Regulations came into use in Nigeria in 1995.*

Objective: *This study examined the nutrition labelling formats and shelf display practices, x-raying of the traditional back-of pack (BOP) labels and the emerging new front-of-pack (FOP) labels in open markets, mini supermarkets and large-scale supermarkets in the Lagos metropolis, Nigeria.*

Methodology: *A descriptive, cross-sectional survey design was conducted to evaluate nutrition labelling formats in 162 purposively selected samples of pre-packaged products. The data were analyzed using Microsoft Excel and presented in tables and figures.*

Results: *Open markets, mini-supermarkets and large-scale supermarkets accounted for 24%, 5% and 71% of the total sample population, respectively. Apart from the 'eye logo', most of the logos found on the labels were voluntary and presently not regulated, hence did not follow any consistent format. Only 4% of these products had the Front-of-Pack labelling format, and these were mostly imported products of multinationals, while 96% of products carried the Back-of-Pack label, comprising both local and imported brands. It was noted that all products on display shelves were usually arranged in such a way as to communicate the brand name without any consideration for nutrition information.*

Conclusion: *These preliminary findings highlight the position of nutrition labelling in Nigeria and the need for an urgent review of the present labelling regulations for better consumer communication and alignment with global trends.*

Keywords: Pre-packaged Food, Market Survey, Nutrition labelling, Front-of-Pack, Back-of-Pack

INTRODUCTION

Several publications are available in literature on the subject of nutrition labelling. However, a substantial number of these appear to focus on consumer perception, understanding or use of nutrition labelling. Most of these studies were, however, observed to have been carried out in developed countries, with very few from Africa, including Nigeria (1). From these studies, it is evident that factors such as education level, gender, race, age, ethnicity, income, and the way a product is being marketed (i.e. packaging, dominant information on the package, font style and legibility) influence the consumers' interests in nutrition labelling. Back-of-Pack is the traditional form of nutrition labelling that most countries specify, but even this is yet to be mandatory for food products in some countries especially in Africa (2). For example, countries such as Kenya, Mauritius, Vietnam, Venezuela, Morocco etc. do not mandate nutrition labels on a food package, but they provide guidelines for manufacturers that intend to (3). The practice of mandatory nutritional labelling by food and beverage manufacturers or marketers is, however prevalent in advanced countries such as United States of America, Canada and United

Kingdom, where it is obligatory to do so (3). The food/labelling regulations in these cases require manufacturers to provide standard nutrition labels displaying information on specified nutrients.

There are many important diet- related public health problems and diseases such as: obesity, high blood pressure; cancers, diabetes; osteoporosis and cardiovascular diseases. The World Health Organization (WHO) reported that dietary factors account for approximately 30% of cancers in industrialized countries (4).

Front-of-pack nutrition labels are being promoted as an important policy tool by WHO and other bodies to reduce the incidence of non-communicable diseases and improve the health of populations (5). It has in fact, been specifically recommended that to achieve strides in public health objectives, nutrition labelling should be incorporated into nutrition and health policies of countries (6). The different types of Front-of-Pack labelling that currently exist were developed to provide information at a glance so that the consumer can easily determine whether a product is healthy or not (7). Due to the increasing number of Front-of-pack labels being developed, controversies are becoming apparent as to whether these labels are useful in the long run and whether they serve the purpose they are supposed to or they are just confusing the consumers on making choices. There are also controversies as to whether the selected nutrients displayed on both front-of-pack and back-of-pack nutrition labels are sufficient to help a consumer determine whether a food product is healthy. However, there are studies that have proven significant strides in the impact of nutrition labelling on the health of a population. With many consumers struggling with health problems related to food consumption, including obesity, diabetes and heart coronary problems (8), tackling nutrition and diet related health issues has become a major concern for both food marketers and policy makers around the world.

With increasing efforts and focus on how to improve public health, greater emphasis is now on nutrition labelling, especially Front-of-Pack labelling, because this is more effective in terms of communicating with the consumer and therefore likely to have greater impact in achieving our food and nutrition objectives as already being implemented in many countries. This will not only push manufacturers to develop healthier products, but should also encourage them to find ways to simplify information displayed on their packages.

In 2004, the WHO called upon the food industry to help prevent the continuous rise in non-communicable diseases. In response, the Choices International Foundation was established in 2006 with the aim to enhance availability of healthy products for consumers and to make the healthy choice the easy choice. Many countries have different forms of logo and they are based on the Choices International criteria or share the same basic principles. Every country has a specific food culture, food supply and nutrition issues. Therefore, no nutrition logo program is exactly the same, while almost all positive logo schemes share common features. These include the logo indicating the topmost healthy products and summarizing the healthiness of a product, displayed in a simple and clear way. Products are also classified into product categories to be able to offer healthy options for different kinds of products to consumers, while specific criteria are set for every product group showing nutrients that enhance the risk of non-communicable diseases (NCDs). These are sugar (total or added sugar), sodium or salt, fat (total, saturated, and/or trans-fat) and energy. Fiber criteria are often included, as fibre consumption has been shown to reduce the risk of NCDs (9).

Most countries have traditionally adopted the mandatory back-of-pack nutrition labelling, although in some other countries, this is only mandatory in cases where a nutrient claim is made. Contrary, a very small number of countries have now adopted mandatory front-of-pack labelling. Currently, approximately 30 countries have adopted the front-of-pack labelling system in different forms. European countries like Czech Republic, Sweden, Norway, Denmark, Macedonia, Finland, Lithuania, Iceland, Croatia and Slovenia have adopted the use of a form of logo based on the international dietary guidelines (10). This is similar to what is in use in Argentina, which is the only South American country to have adopted this logo on the Front-of-Pack Nutrition Label (FoPL). According to Choices International Foundation (2019), African countries with any form of logo similar to this are Nigeria (NHF- Healthy Heart Logo), Zambia, Zimbabwe and South Africa, while Asian countries are Singapore, Malaysia, Thailand, Brunei, Philippines and China. However, countries such as Israel, Vietnam and Indonesia have all proposed a form of positive nutrition labelling system conforming to the dietary recommendations and a mandatory negative label for products with high quantities of sugar, saturated fat and sodium.

Nutritional labelling is widely advocated as a means of promoting healthier products for purchasing and consuming, including lower energy intake (11). Internationally, many different nutritional labelling schemes have been introduced (11). Globally, consumer attitudes and awareness of the nutritional aspects of foods are increasing rapidly due to increasing epidemic of overweight and obesity. Labels now contain marketing information, like the selling price, brand name, commercial offers, including information on the safe storage, preparation, handling and environment-friendly conditions for packaging disposal (12). Information on ingredients, nutrition and the declaration of potential allergens and nutrition and/or health claims, help consumers to make an informed decision. Nutrient content claims are fairly common on products, for example, high in, source of, enriched/fortified with, low in, no added and free from. Nutrient function claims are also popular in many countries. For fortified foods, ensuring that labels are credible is an important aspect of consumer confidence in the products (13). There is also increasing emphasis on communication for food safety and the protection of the health of the consumer.

Manufacturers use numerous claims to distinguish their products, extend product lines, respond to regulations and public health communications and enhance the image of their brand (14). However, in Nigeria, it is a legal requirement for manufacturers to have a list of ingredients on the label of their pre-packaged food products. Contrary, it is not legally mandatory for them to disclose the nutritional content of such pre-packaged food products, except when the manufacturer makes such nutritional claim (15). WHO recommends communicating nutrition information by means of front-of-pack labelling as a tool to combat unhealthy food choices and improve public health. An effective Front-of-pack label, therefore, is one that helps consumers distinguish between healthier and less healthy products. A combined strategy of nutrition education, health promotion, behaviour change, improving supplies and affordability of nutritious foods, limitations on marketing of unhealthy foods to children and better labelling can contribute to empowering people to choose healthy diets (16).

The Codex Alimentarius Commission is used by most countries to develop guidelines on Nutrition labelling and nutrition and health claims. There are three standards and guidelines relevant to nutrition labelling developed by CODEX:

1. General Standard for the Labelling of Prepackaged Foods (Codex Stan 1_1985, revised 1991, 2001).
2. General Standard for the Labelling of and Claims for Prepackaged Foods for Special Dietary Use (Codex Stan 146_1985).
3. Guidelines on Nutrition Labelling (CAC/GL 2_1985, revised 1993).

Globally, as already highlighted, nutrition labelling under current regulations is still generally regarded as Voluntary, unless a nutrition claim is being made. Once a nutrition claim is made, declaration of four nutrients is expected to be mandatory and these are Energy, Protein, Available Carbohydrate, Fat as well as any other nutrient for which a claim is made (17). According to Codex Alimentarius Commission Guidelines, where a claim is made for dietary fibre, dietary fibre must also be declared and any other nutrient deemed by national legislation to be important for maintaining good nutritional status may also be listed (18).

MATERIALS AND METHODS

i. Study Location and Population

The rapid urbanization and increasing population of the city of Lagos, now estimated at over 21 million, makes it the second largest metropolitan city in Africa. This has led to its classification into two main areas: the Island, which was the initial city of Lagos, before it expanded into west of the lagoon, an area now generally known as the Mainland. With an urban segment of the population standing at about 85%, the city consists of low to high-income socio-economic classes who shop in different types of markets. This survey was conducted to evaluate the status of Front-of-Pack Labelling in the nutrition labelling of pre-packaged products and the shelf display practices in 19 major food markets serving different socio-economic classes in the Lagos Metropolis, Lagos State, Nigeria.

ii. Market Classification, Description and Selection

The markets were divided based on area, size and categorization into three different types; namely Open Markets, Mini-Supermarkets and Large-Scale Supermarkets, respectively. In view of the large number of markets in the Lagos metropolis in each category, the markets were purposively selected in the Island and Mainland areas for the survey using a descriptive, cross-sectional

procedure, with emphasis on the availability and distribution of pre-packaged products.

The Open markets are the traditional markets, which are largely unregulated and the products displayed in the open with free access between buyers and sellers on daily basis. The Mini-Supermarkets are neighbourhood stores usually serving as grocery, health, household and pre-packaged food markets for the immediate middle class communities. The Large-Scale Supermarkets are the large, self-service shops offering a wide variety of foods, beverages and household products and are usually organized into sections.

The selected markets visited in the three categories are as listed below:

- Open Market category
  i. Mainland – Agege, Mushin (Ojuwoye), Bariga (Oja Abule), and Oshodi;
  ii Island - New Oniru; Balogun
- Mini-Supermarket category
  i. Mainland – *Addide Store*, Ifako, Gbagada; *Blessed Store,* Mushin.
  ii. Island – No existing market in this category at the time of the study
- Large-Scale Supermarket category
  i. Mainland – *Justrite*, Abule-Egba and Bariga; *Spar,* Tejuoso and Ilupeju and *Winnie Supermarket,* Ojota; *Home Affairs* Stores, Ojota; *Shoprite* Stores in Ikeja Mall and *Shoprite store* in Maryland Mall.
  ii. Island – *Spar* in Adeola Odeku Street; *Hubmart* in Adeola Odeku Street; and *Shoprite* at The Palms

iii. Sampling and Product Categorization

Five hundred and seventy-nine (579) prepackaged food samples of different brands were purposively collected on the basis of the availability of standard nutrition facts label on the packaging (whether BoP or FoP) from all the above-listed markets. The samples were now further sorted into product categories to avoid duplication of product brands from the different markets. This resulted in a final sample population of 162 non-identical product brands. The various brands were then sorted into 19 food product categories, namely: Flours, Chocolate Beverages, Cookies, Infant formulas, Dairy Products, Juices and Drinks, Cereals, Vegetable Oils, Nuts, Margarine, Frozen Yam Cubes, Flour-Based Snacks, Baking Ingredients, Canned Meat and Fish products, Custard Powder, Canned Fruits, Cubed and Powdered Spices, Legumes, and Pasta Products.

iv. Data Collection and Analysis

A Fujifilm 12 Megapixel Camera and Tecno LC 6 Phone (8Megapixel Front/Rear) were used to capture the nutrition labels and the different food labelling formats of the pre-packaged product samples. A Note Pad was used to record all observations, consumers' opinions and suggestions during the survey. Consumers' opinions were also obtained through informal interviews while shelf display practices were observed in all the markets visited. Questions asked include "whether nutrition labelling informs their choice of a product", "whether they check for product Best Before Date on Labels before making a purchase" and "whether they know the different nutrition labelling formats". A Lenovo 38RMCAT Laptop with Microsoft Office Professional Plus 2019 was used for computation and preparation of report as necessary.

Analysis of data was done using Microsoft Excel Spreadsheet version 2019 MSO and are presented in Tables, Figures, and Pictorial forms.

RESULTS

The samples of 162 products selected as representative of all the product groups in the market in the 19 categories comprised the following: Flours (7); Chocolate Beverages (16); Cookies (26); Infant formulas (5); Dairy Products (13); Juices and Drinks (24); Cereals (19); Vegetable Oils (8); Nuts (6); Margarine (4); and Frozen Yam Cubes (2). Others are Flour-Based Snacks (8); Baking Ingredients (5); Canned Meat and Fish products (3); Custard Powder (2); Canned Fruits (1); Cubed and Powdered Spices (5); Legumes (3); and Pasta Products (5).

These were analyzed on the basis of food product category, type of nutrition label, and percentage of the samples in each category carrying either FoP or BoP nutrition labels. These results are summarized in Table 1.

Table 1: Summary of Distribution of Front-of-Pack (FOP) and Back-of-Pack (BOP) Labels

S/N	Category	BoP %	FoP %	No Nutrition Label %
1	Flour	4.32	-	95.68
2	Beverages	9.26	-	90.74
3	Cookies	16.05	-	83.95
4	Formula	2.47	-	97.53
5	Dairy	7.41	-	92.59
6	Drinks	14.20	0.62	85.18
7	Cereals	11.73	0.62	87.65
8	Vegetable Oil	2.47	2.47	95.06
9	Nuts	3.70	0.62	95.68
10	Margarine	2.47	-	97.53
11	Tuber	1.23	-	98.77
12	Snacks	5.60	-	94.40
13	Baking material	3.09	-	96.91
14	Meat	1.23	-	98.77
15	Powder	1.23	-	98.77
16	Fruit	0.62	-	99.38
17	Spices	1.85	-	98.15
18	Legume	1.85	-	98.15
19	Pasta	3.25	-	96.75
	TOTAL%	95.67	4.33	
	AVERAGE%			89.79

Figure 1: Percentage of products with FOP and BOP label

Figures 2 and 3 show the percentage of Back-of-pack and Front-of-pack labels on products from both the multinationals and local manufacturers.

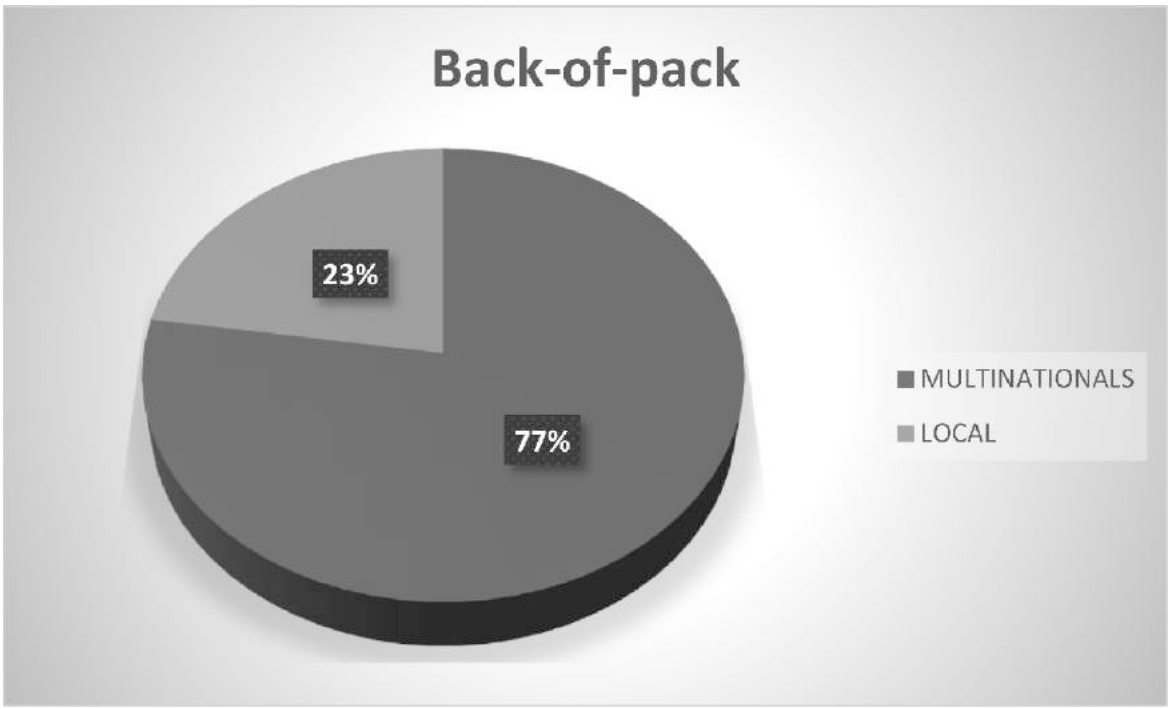

Figure 2: Percentage of back-of-pack labels

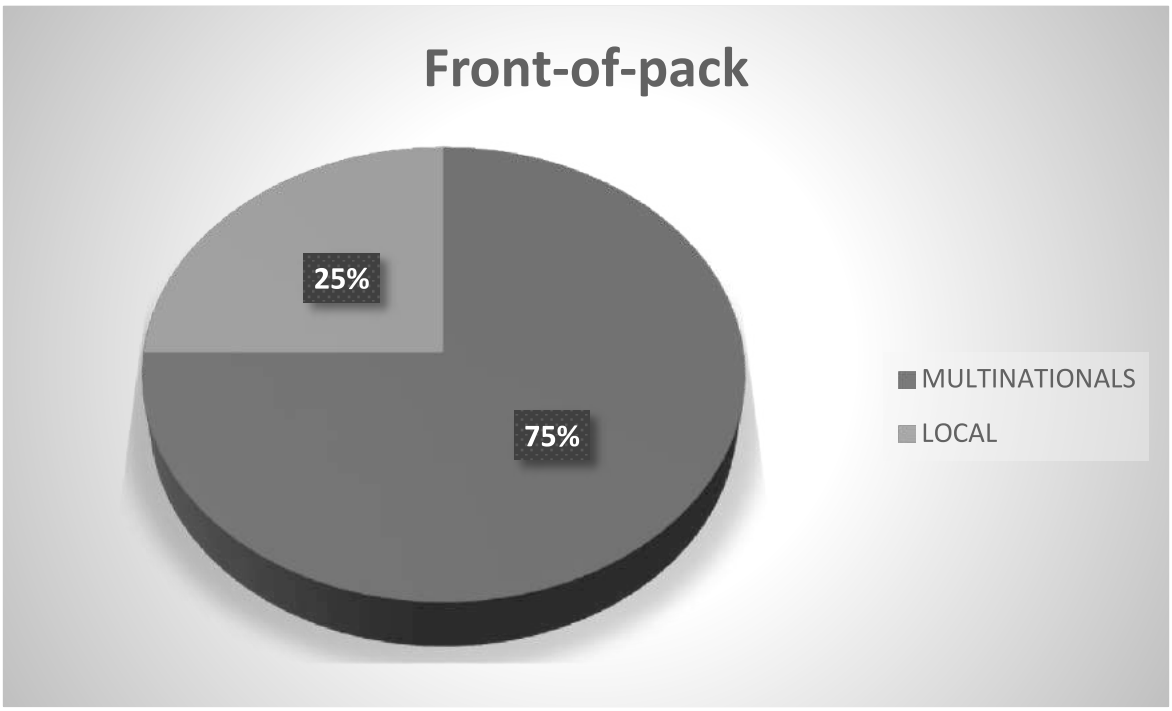

Figure 3: Percentage of front-of-pack labels

Figure 4 is a graphical representation of the 19 categories of products with their respective percentages while Figure 5 represents the percentages of product brands captured per market category.

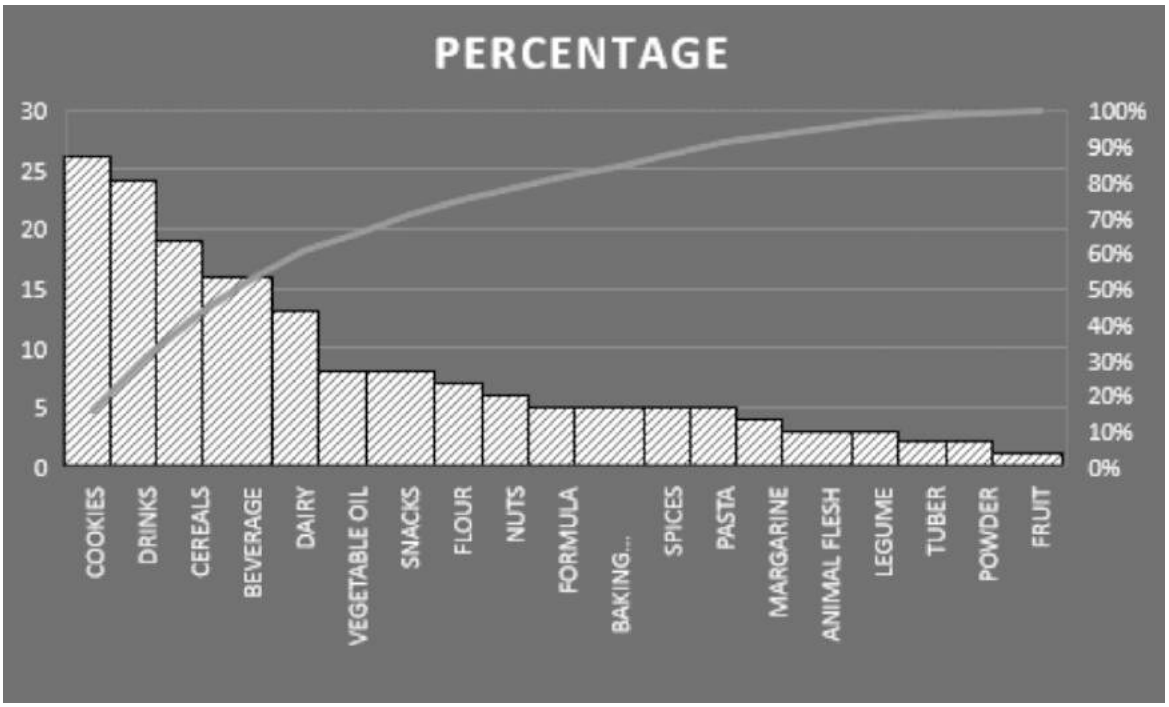

Figure 4: Product category percentage

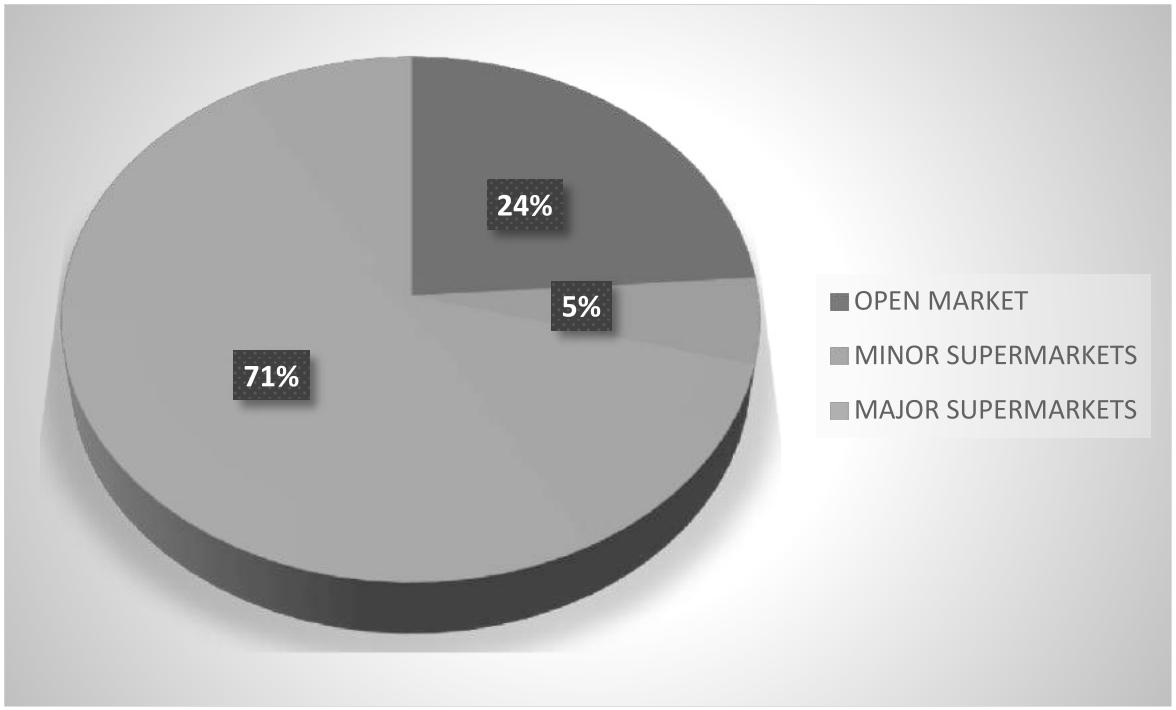

Figure 5: Market category

Figure 6 shows a powdered milk brand carrying a Back-of-pack label. The Back-of-Pack nutrition label accounts for 96% of the products while Figure 7 represents the Front-of-Pack nutrition label which accounts for only 4% of the products identified in this survey

Figure 6: A Peak Milk pack with an inscription of Front-of-Pack and Back of Pack labelling

Figure 7: Vegetable Oil Brands with Front of Pack labels (logos)

Figure 8 shows the different nutrition and health logos in use for nutrition labeling such as the Guideline Daily Amount (GDA), Eye logo for Vitamin A fortification, Multiple Traffic light logo and the Nigerian Heart Foundation Healthy Heart label.

Figure 8: Typical Nutrition and Health Logos on Pre-packaged Food Labels

Figures 9 and 10 represent products having a form of heart logo and those which do not have any form of logo respectively.

Figure 9: Sunola Soya oil having Nigerian Heart foundation logo with Banga Oil carrying no logo.

Figure 10: Devon King's Pure Vegetable Oil without any form of logo or heart label

DISCUSSION

Free access to the markets for data collection was a major challenge as most vendors in the three different market categories were unwilling to allow pictures for sample collection. However, while most open market traders granted audience only in the expectation of patronage, the large supermarkets insisted on a documented access.

Of particular significance in this study was the fact that 89.79% of the sampled pre-packaged products carried no nutrition facts label, whether FoPL or BoPL. In addition, only 4.33% of the samples in the 19 categories of food products had FoP. It was observed that products of multinational companies having the BoPL were 77% while Nigeria-made products with BoPL were only 23%. On the other hand, of the 4.33% having FoPL, products of multinational companies were 75% while Nigeria-made products were only 25%. It was also noted that where nutrition facts labels are displayed on the Back-of-Pack, the Traffic Light symbol is at the front-of-pack where the brand name is conspicuously displayed.

The distinction being made here between the FoP and BoP labels is in the location of the nutrition facts panel. The FoP nutrient label has the nutrition facts panel displayed at the front of the product label while the BoP nutrient label has the nutrition facts panel displayed at the back of the product label. The Traffic Light symbols were found mostly on imported products like Dano Instant and Elite Sugar-free Biscuits, although some locally manufactured products such as Knorr Chicken seasoning cubes also carry such label information. Locally produced products such as Checkers Instant custard powder were observed to display the vital nutrients (Vitamins and Minerals) in traffic colours on the Front-of-Pack (FoP) which can confuse the consumer.

The products were observed to be displayed with the sole aim of advertising the brand name as no priority is given for marketing on the basis of nutrition labels. This means that only educated and discerning consumers will take time to check for such important label information at the back of the pack. Grunert, Wills *et al.,* (2010) using a combination of observations and interviews in supermarkets found that the information most attended to is the brand, the product name, and the pictorial stimulus on the pack, in that order, and that all other information had a relatively low probability of being examined. Groeppel-Klein and Germelmann 2011 using a mobile eye-tracking device in supermarkets corroborated these research findings in another study.

Heart logo was observed to be included mainly on Vegetable oil brands and Quaker Oats; this was displayed as Front-of-Pack hence easily seen by any discerning consumer while some products had the Traffic Light logo and GDA logo.

In this study, it was evident that most products from MSMEs (Micro, Small and Medium Enterprises) did not carry any form of nutrition information on their labels. It is also worthy to note that some of the established brands still do not prioritize nutrition labelling when designing their labels, as the nutrition facts are displayed in an obscure window on the label where even the discerning and conscious consumer would struggle to find them. Dry products with low moisture content and others which have long shelf-life in local markets, appeared to stay longer on the shelf, as the vendors do not appear to understand or follow the concept of First-In-First-Out (FIFO). It was observed in the local markets that these products on display are always exposed to dust, direct sunlight and all forms of inclement conditions. The customer is also not well guided by the Best Before (BB) Dates on the labels or on FIFO basis by the vendor. This means there is a probability that products might expire in the stores prior to sale, which the consumer may unknowingly purchase in such markets. It was therefore not surprising to find in one of the supermarket stores during the survey, a product that had expired a day earlier on the shelf. This was brought to the vendor's attention.

In contrast, in the mini supermarkets and major supermarkets such as Blessed Store, Addide, SPAR, Justrite, Shoprite, Winni Home Affairs and Hub Mart, where there was evidence of the practice of FIFO, products are not likely to get expired on their shelves as there are people saddled with the responsibility of monitoring. Some products were observed to be voluntarily fortified with vitamins and minerals either as a marketing tool, as a way of compensating for losses during processing or to ensure adequate levels of such vitamins for specific claims in the final product. The 'eye' logo was also observed on some product labels, which is in use in Nigeria to show evidence of Vitamin A fortification in such products. However, it is not clear how far this has helped in addressing the Vitamin A deficiency problems in the country.

In the study reported by Choices International Foundation in 2019, on the influence of international guidelines to tackle the double burden of malnutrition (DBM) on the development of food and nutrition policies in Nigeria, relevant stakeholders were interviewed from government, civil society organizations (International and local), academia and private sectors working in the food and nutrition field. They noted some points and recommendations to consider to aid the implementation of Front-of-pack labelling in Nigeria. These include an assessment on consumer behavior on know-how of nutrition labels, both front or back, influence consumer choices in view of the large differences in consumer behavior that exist in Nigeria. They noted the fact that the sheer size and regional differences in the country make it difficult to draw general conclusions on how to help consumers make the right food choices. Such assessment will ensure the development of a comprehensive strategy that will work in not only Lagos but Nigeria as a whole. The need for the cost implications for food companies to adopt this strategy especially in resource-constrained countries such as Nigeria and other low-and-middle-income countries (LMICs) was also identified, as well as the need for professional level monitoring and evaluation of nutrition labels. This may mean a period of moratorium for capacity-building through the strengthening or development of regulatory and enforcement systems. There was also the recommendation of the need for awareness creation on the importance and vital role of strategies such as front-of-pack labelling as a tool to enable consumers make quick well-informed food choices. Such sensitization would need to be done by government or other institutions with a high credibility in the eyes of consumers. The possibility of government leveraging on the SUN Business Network operating in Nigeria to increase the involvement of private sectors such as food companies (also local SMEs) in providing healthier food options for the population was also highlighted in the report. These recommendations are still relevant today.

A careful study of consumers who came into the different markets during this survey showed that most consumers involved in making purchase decisions for the family are not nutrition conscious. It was observed that most of them hardly checked labels for nutrient content before purchase, while the few who checked were probably driven by some health challenges or on advice by their physicians to avoid certain nutrients. It is clear, therefore, that opportunities abound in areas of sensitization of consumers, producers, traders and retailers who are all involved in handling products along the value chain.

CONCLUSION

It is clear from this survey that the issue of nutrition labelling in Nigeria is not receiving

priority attention from stakeholders, whether consumers, manufacturers or regulators. With 89.77% of the samples having no nutrition label at all, the situation calls for urgent regulatory attention. In fact, most products on the display shelves in the markets visited in this study were arranged in such a way as to communicate the brand name of the product without any consideration for nutrition information. This was the same whether in the Malls, Minimarkets and Open markets and this display pattern is a major evidence of gap in nutrition consciousness, which should be of concern. It is clear therefore, that sensitization is critically needed to educate both sellers and buyers at such retail outlets. Once there is no proper communication of the inherent nutrients in a product, then the consumer may be liable to misinformation. Some products even contain allergenic substances that can cause health hazards to consumers. On the other hand, when the information is properly communicated on the nutrition label, such risk is minimized, as the consumer is able to make an informed choice. From the comments and suggestions of some of the consumers informally interviewed during this survey, the need for the nutrition labels to be displayed rather than the present practice of brand display has become more evident. Presently, there appears to be very little consciousness of the average consumer, irrespective of the socio-economic class, about the value of nutrition labelling in making informed food choices or even to call for national implementation of an FoPL strategy for the benefit of consumers in Nigeria. The position of Choices International Foundation calling for evidence-based research from the analysis of other countries implementing this strategy to facilitate a buy-in and investment from governments, may therefore be worth considering.

It is also suggested that in order to solve the improve the mode of nutrition communication on prepackaged products, the change to front-of-pack labelling system should be initially encouraged through a stakeholders forum highlighting why manufacturers should promote both the brand name and the nutrition profile on the front label.

Such sensitization will need to start with the manufacturers, as there is need for them to understand the importance of the consumer interface and recent global trends in nutrition labelling. On the part of retailers such as local traders in the market, mini-supermarkets and large-scale supermarkets, such sensitization will also be of benefit to them indirectly as they will be better able to understand why some health-related issues may arise from consumption of these products. The Consumer Advocacy for Food Safety and Nutrition Initiative (CAFSANI), as well as the Nigerian Heart Foundation (NHF), must work with other stakeholders involved, especially government regulators like National Agency for Food and Drug Administration and Control (NAFDAC), to synergize efforts and ensure better public enlightenment on the need for Front-of-Pack nutrition labelling of pre-packaged food products in Nigeria.

ACKNOWLEDGEMENT

The authors gratefully acknowledge the grant support received from the Nigerian Heart Foundation for Consumer Advocacy for Food Safety and Nutrition Initiative to undertake this study. The contribution of Choices International Foundation to the report is also highly appreciated.

REFERENCES

1. Aygen, F.G. (2012). Determinants of Nutrition Label Use among Turkish Consumers. International Journal of Humanities and Social Science, 2(7), 53-70.
2. EUFIC, (2018). Global update on nutrition labelling
3. Codex Alimentarius Commission (2012). Guidelines on Nutrition labelling. Accessed 27 November 2012. Available at www.codexalimentarius.net/download/standards/34/CXG_002e.pdf
4. Key T.J, Schatzkin A, Willett W.C, Allen N.E, Spencer E.A and Travis R.C. (2004). Diet, nutrition and the prevention of cancer. Public Health Nutrition, 7: 187–200.
5. Egnell M, Talati Z, Hercberg S, Pettigrew S and Julia C. (2018). Objective Understanding of Front-of-Package Nutrition Labels: An International Comparative Experimental Study across 12 Countries. Nutrients. 10(10).
6. World Health Organization, (2015). Technical meeting on nutrition labelling for promoting healthy diets Lisbon, Portugal. Available from: https://www.who.int/nutrition/events/2015_meeting_nutrition_labelling_diet_9

to11dec/en/ [Accessed 8 January 2019].
7. FAO/WHO. (2007). Codex Alimentarius Food Labelling (Fifth edition), Rome.
8. World Health Organization (2018). Obesity and overweight fact sheet. Retrieved July 30, 2018, from http://www.who.int/en/news-room/fact-sheets/detail/obesity-and-overweight.
9. Choices International Foundation (2019a). Positive Nutrition labelling – A Scientific Overview. www.choicesprogramme.org. Choices International Foundation, PO Box 10218, 2501HE, The Hague, The Netherlands.
10. Choices International Foundation (2019b). Addressing the Double Burden of Malnutrition in Nigeria, July 10th. www.choicesprogramme.org. Choices International Foundation, PO Box 10218, 2501HE, The Hague, The Netherlands.
11. Crockett R.A, King S.E, Marteau T.M, Prevost A.T, Bignardi G, Roberts N.W, Stubbs B, Hollands G.J and Jebb S.A. (2018). Nutritional labelling for healthier food or non-alcoholic drink purchasing and consumption. In: The Cochrane database of systematic reviews. Vol. 2.
12. Cyrek P. (2015). Packaging as a source of information about food products. 39:9–21.
13. Luthringer C.L, Rowe L.A, Vossenaar M, and Garretta G.S. (2015). Regulatory monitoring of fortified foods: identifying barriers and good practices. Global Health: Science and Practice. 3, 3:446-461.
14. Martinez S.W. (2013). Introduction of new food products with voluntary health- and nutrition-related claims, 1989-2010, EIB-108, US Department of Agriculture, Economic Research Service, February, Washington, DC.
15. NAFDAC, (2005): Prepackaging food regulation.
16. Vemula S, Gavaravarapu S.R, Vardhana M.R, Mathur P and Avula L. (2013). Use of food label information by urban consumers in India – a study among supermarket shoppers. Pub. Health Nutrition: 17(9), 2104–2114.
17. Codex Alimentarius Commission. (2013a). Guidelines on Nutrition Labelling: (CAC/GL 2-1985).
18. Codex Alimentarius Commission. (2013b). Guidelines for the use of nutrition and health claims: (CAC/GL 23-1997).
19. Grunert K.G, Wills J.M, Fernandez-Celemin L, Bonsmann S, Storcksdieck G and Nureeva L. (2010). Use and understanding of information on food labels in six European countries, Journal of Public Health, 18 (3), 261 – 77.
20. Groeppel-Klein A and Germelmann C.C. (2011). Improving attitude towards compliance with medication through a public health campaign. A field study. In A. Bradshaw, C. Hackley, & M. Pauline (Eds.), European Advances in Consumer Research (Vol.9, pp. 500 – 501). London, UK: Association for Consumer Research.
21. Choices International Foundation (2019). Positive Nutrition labelling – A Scientific Overview. www.choicesprogramme.org. Choices International Foundation, PO Box 10218, 2501HE, The Hague, The Netherlands.