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RESEARCH ARTICLE

AN ASSESSMENT OF FOOD LABELS OF SOME SELECTED PRE-PACKAGED FOOD PRODUCTS ON THE GHANAIAN MARKET

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ABSTRACT

Background: Adequate Food labels can potentially prevent unhealthy eating and its associated diet-related diseases.

Aim: To assess the extent to which prepackaged food products on the Ghanaian market meet requirements of The Ghana Standards Authority.

Method: Study was cross-sectional. Five shopping centers were selected. Pre-packaged food products (N = 400) were put in 5 groups: Dairy products, Breakfast Cereals, Meat and Fish products, Fruit Juices and Carbonated Drinks, and Confectionery (80 per group; 40 imported products and 40 locally made). Their food labels were observed. The Ghana Standards Authority general labeling rules (L. I. 1541, 1992), was used as reference data. Data was summarized into proportions and percentages.

Results: Adherence to labeling requirements was generally good though better in the imported than the local products. 'Name of product' and 'prominent lettering of product name' were most adhered to while 'Directions for use' was least adhered. Fruit juices, carbonated drinks, dairy products and meat and fish products recorded high adherence rates compared to breakfast cereals and confectionery.

Conclusion: Prepackage food products on the Ghanaian market largely adhered to labeling requirements though better in imported food products than locally made ones.

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INTRODUCTION

Issues of food labelling are attracting more public and regulatory attention due to the increasing production and sale of food in pre-packaged forms and the increased rate of obesity in developing countries (Jessie, 2005). In Ghana, the overall crude prevalence of overweight and obesity in rural and urban Accra was found to be 23.4% and 14.1% respectively among adults aged 25 years and above (Amoah, 2003). Obesity like underweight is a form of malnutrition and constitutes a risk factor of many diseases like diabetes, hypertension and other heart diseases (Gordon-Larsen and Popkin, 2004). The economic burden of these conditions has led to consideration of lifestyle modifications that could effectively affect disease progression and prevention (Byrne, 2003).

Dietary intake forms a major component of these lifestyle attributes needing serious modification. The consumption of unhealthy foods needs to be discouraged through measures including effective food labelling practices. This empowers the consumer to make informed healthy food choices (WHO/FAO, 2003). The food label is one of the most important and direct means of communication of product information between manufacturers and consumers. It enables the consumer to differentiate between individual foods and brands to make informed purchasing choices for good health (Saudi Arabian Standard Organization, 1995). According to the Ghana Standards Board labelling requirement, a pre-packaged food should have the following information on its label; the name of the food, the list of ingredients, the net content and drain weight of product, the name and address of the manufacturer, the country of origin, code to identify the production lot of the product, a date marking and storage instruction. If a food product is treated with ionization radiation, it should be stated as such. With respect to the form and presentation of label, it should be clear, prominent and readily legible. Lettering should be in contrasting colour to the label background, name

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of product should also be in most prominent lettering of label, name and net contents of the food should be on normal presentation side of the packaged product and label should be in English unless the product is destined for export. Documentation of compliance of pre-packaged food products on the Ghanaian market to labelling requirements in Ghana is scanty.

Aim

The study was aimed at assessing the food labels of some selected locally made and imported pre-packaged foods in selected supermarkets in the Accra metropolis, to see the extent to which they meet Ghana's standards for food labelling.

MATERIALS AND METHODS

An observational cross-sectional study design was employed in this study. The study conveniently selected 5 supermarkets in the Greater Accra Region of Ghana. The pre-packaged food products were grouped into five categories namely; Dairy products, Breakfast cereals, Meat and Fish products, Fruit Juices and Carbonated Drinks and Confectionery. Eighty pre-packaged food products (40 local and 40 imported) were selected from each category making a total of 400. Food items were selected conveniently in each of the shopping centers and assessed thoroughly. A structured questionnaire was used for collecting data in this survey. The questionnaire was in two sections. Section A recorded basic information about the country of origin and the type of product which was used for placing the product into the appropriate category i.e. either locally made or imported and either a Breakfast cereal Meat and Fish product, Fruit Juice and Carbonated Drink or a Confectionery. Section B was a one page check list for the presence of labelling information on the food package. The required labelling information was in accordance with The Ghana Standards Board (Foods, Drugs and other goods) general labeling rules, L. I. 1541, 1992. They included the name of the food, the list of ingredients, the net content and drain weight of product, the name and address of the manufacturer, the country of origin, code to identify the production lot of the product, a date marking and storage instruction. If a food product is treated with ionization radiation, it was to be stated as such. With respect to the form and presentation of label, it had to be clear, prominent and readily legible. Lettering was to be made in a contrasting colour to the label background. The name of product had to be on the normal presentation side of the packaged product and labels had to be in English.

Data Collection

Ethical clearance was sought from the Ethics Review Committee of the School of Biomedical and Allied Health Sciences, University of Ghana. A written consent was obtained from the management of the respective shops before the commencement of the study. Following the approval by the management of the supermarkets, daily visits were paid to each shop. On each visit, all prepackaged food products arranged on the shelves were identified. Questionnaires were completed for

each product, first to categorize them and then the information on the label was thoroughly observed and compared with the basic requirements on the checklist. 'Yes' was ticked for requirements which were present on the label and 'no' for requirements which were absent on the food label. Repeated visits were paid to each shop until the items of interest were exhausted.

Data Analysis

Data collected was entered using Microsoft Excel. Analysis was done using SPSS version 20.0. The data was summarized into frequencies and percentages and presented in tables.

RESULTS

A total of 400 pre-packaged food products (200 locally made and 200 imported) were surveyed. The compliance of products to labelling requirements is shown in Table 1. All products had a name on their label. Generally, over 80% of products complied with requirements such as List of ingredients, Name and address of manufacturer, Net content, Production code and Country of origin.

About 50% and less complied with the use of expiry dates (or its equivalents; 'best before' date and 'use by' date), storage instructions and directions for use. In all these, locally made products defaulted the most compared to foreign products.

With regards to the form and presentation of food labels, over 70% of all products complied with all requirements. The least complied was 'Name and net content on normal presentation side'.

Table 2 shows compliance of products in the various categories to mandatory labelling requirements. Adherence was low for 'name and address of manufacturer' ranging from 71.3% (meat and fish products) to 92.5% (fruit juices and carbonated drinks). For date markings (expiry date, use by date and best before date) averagely, Fruit juices and carbonated drinks as well as dairy products had the highest compliance (97.6%) while Breakfast cereals had the least compliance (93.8%).

Table 3 shows compliance of the various food categories to conditional labelling requirements. In general, compliance to conditional labelling requirements was low for all food categories compared to mandatory food labeling requirements. The least compliance of 12.5% to "instructions for use" was recorded for Fruit juices and Carbonated drinks.' The highest compliance (67.5%) to "storage instructions" was also recorded for Dairy products. None of the food products had undergone ionization radiation.

In Table 4, the compliance of food products in the various categories to labelling requirements regarding form and presentation of labels is shown. The most met requirement by all the categories was 'prominent lettering of product name' (100%) while the least met was 'name and net content of product on normal presentation side'. Compliance ranged from 58.8% in meat and fish products to 88.8% in fruit juices and carbonated drinks.

Table 1. Compliance of locally-made and imported pre-packaged food products to food labeling requirements, frequency (percentage)

Food Labeling Requirements	Compliant			Non-compliant		
	All	Local	Foreign	All	Local	Foreign
1 Name of product	400 (100)	200 (100)	200 (100)	0	0	0
2 List of ingredients	391 (97.8)	195 (97.5)	196 (98)	9 (2.3)	5 (2.5)	4 (2.0)
3 Net content	370 (92.5)	172 (86)	198 (99)	30 (7.5)	28 (14.0)	2 (1.0)
4 Name and address of manufacturer	341 (85.3)	158 (79)	183 (91.5)	59 (14.3)	42 (21)	17 (8.5)
5 Country of origin	398 (99.5)	200 (100)	198 (99)	2 (0.5)	0	2 (1.0)
6 Production code	355 (88.8)	157 (78.5)	198 (99)	45 (11.3)	43 (21.5)	2 (1.0)
7a Expiry date	168 (42)	87 (43.5)	81 (40.5)	232 (58)	113 (56.5)	119 (59.5)
7b Best before date	203 (50.8)	96 (48)	107 (53.5)	197 (49.3)	104 (52)	93 (46.5)
7c Use by	11 (2.8)	2 (1.0)	9 (4.5)	389 (97.3)	198 (99)	191 (95.5)
8 Storage instructions	199 (49.8)	82 (41.0)	117 (58.5)	201 (50.3)	118 (59.0)	83 (41.5)
9 Instructions/directions for use	129 (32.3)	43 (21.5)	86 (43)	271 (67.8)	157 (78.5)	114 (57.0)
10 Treated with ionization radiation	0	0	0	400 (100)	200 (100)	200 (100)
11 Clear and prominent label	360 (90.0)	182 (91)	178 (89.0)	40 (10.0)	18 (9.0)	22 (11.0)
12 Label readily legible	357 (89.3)	182 (91.0)	175 (87.5)	43 (10.8)	18 (9.0)	175 (87.5)
13 Lettering in contrasting colour to background	396 (99)	197 (98.5)	199 (99.5)	4 (1.0)	3 (1.5)	1 (0.5)
14 Label in English	394 (98.5)	199 (99.5)	195 (97.5)	6 (1.5)	1 (0.5)	5 (2.5)
17 Name and net content on normal presentation side	297 (74.3)	125 (62.5)	172 (86.0)	103 (25.8)	75 (37.5)	28 (14.0)
18 Prominent lettering of product name	400 (100)	200 (100)	200 (100)	0	0	0

Table 2. Compliance of food products in the various categories to mandatory labeling requirements, frequency (percentage)

Mandatory food labeling requirements	Fruit juices and carbonated drinks	Breakfast cereals	Dairy products	Meat and Fish products	Confectionery
1 Name of product	80 (100)	80 (100)	80 (100)	80 (100)	80 (100)
2 List of ingredients	78 (97.5)	78 (97.5)	78 (97.5)	80 (100)	77 (96.5)
3 Net content	80 (100)	71 (88.8)	76 (95.0)	78 (97.5)	65 (81.3)
4 Name and address of manufacturers	74 (92.5)	70 (87.5)	73 (91.3)	57 (71.3)	67 (83.8)
5 Country of origin	79 (98.8)	80 (100)	80 (100)	79 (98.8)	80 (100)
6 Production code	77 (96.5)	65 (81.3)	75 (93.8)	70 (87.5)	68 (85.0)
7 Expiry date	28 (35.0)	31 (38.8)	32 (40.0)	40 (50.0)	37 (46.3)
Best Before	49 (61.3)	41 (51.3)	41 (51.3)	34 (42.5)	38 (47.5)
Use by	1 (1.3)	2 (2.5)	5 (6.3)	3 (3.8)	0

Table 3. Compliance of food products in the various categories to conditional labeling requirements, frequency (percentage)

Conditional Requirements	Fruit juices and carbonated drinks	Breakfast cereals	Dairy products	Meat and Fish products	Confectionery
1 Storage Instructions	44 (55.0)	40 (50.0)	54 (67.5)	27 (33.8)	34 (42.5)
2 Instructions or directions for use	10 (12.5)	41 (51.3)	40 (50.0)	21 (26.3)	17 (21.3)
3 Treated with ionization radiation	0	0	0	0	0

Table 4. Compliance of food products in the various categories to labeling requirements regarding form and presentation of labels, frequency (percentage)

Form and presentation of label	Fruit juices and carbonated drinks	Breakfast cereals	Dairy products	Meat and Fish products	Confectionery
1 Label clear and prominent	69 (86.3)	78 (97.5)	77 (96.3)	71 (88.8)	65 (81.3)
2 Label readily legible	67 (83.8)	75 (93.8)	77 (96.3)	71 (88.8)	67 (83.8)
3 Lettering in contrasting colour to background	79 (98.8)	79 (98.8)	80 (100)	79 (98.8)	79 (98.8)
4 Label in English	79 (78.8)	78 (97.5)	80 (100)	80 (100)	77 (96.3)
5 Name and net content on normal presentation side	71 (88.8)	58 (72.5)	70 (87.5)	47 (58.8)	51 (63.8)
6 Prominent lettering of product name	80 (100)	80 (100)	80 (100)	80 (100)	80 (100)

DISCUSSION

Findings from the study revealed that all the 400 food products sampled had 100% compliance for name of product and prominent lettering of product name. This agrees with a study by National Institutes of Nutrition (2009) in India where 100% of products surveyed complied by showing the 'name of product'. This may be due to the fact that manufacturers are interested in marketing their products. A product name may therefore allow easy identification and selection of the product on the market. According to Obeesi (2010), food labeling is part of packaging, which in turn promotes product marketing and advertisement.

The requirement with the least compliance in this study was 'Instructions or Directions for use' (32.3%) which could be explained by the fact that not every product requires an instruction before usage. Similarly, results of the assessments of labels collected in Australia and New Zealand in 2006 showed that "Directions for use" as a proportion of labels assessed, was notably lower (12%). On the contrary, a study by National Institute of Nutrition (2009) revealed a better compliance (77%). 'Instructions or Directions for use' is only necessary in situations where it is not obvious as to how the product would be prepared or used (Codex Alimentarius, 2000).

For instance, Confectioneries, some fruit juices and carbonated drinks can be consumed without any instruction or direction for use. This to a large extent may explain the observed low compliance rate. With increasing advocacy for lifestyle modifications to prevent diet related diseases (WHO, WEF 2008), there is a growing consumer interest in making healthy food choices. Food labels no doubt needs to provide all necessary information to meet consumer demands for information to help them make informed food purchasing decisions (Washi, 2001). In this study, although compliance of both locally made products and imported products followed a general trend, the default rate was generally higher in locally made products compared to imported ones. For example, for both 'net content' and 'List of ingredients on food label s', locally made products defaulted more (14% and 2.5%) respectively compared to imported products (1% and 2.0%) respectively. This information notwithstanding are vital in aiding consumer decisions in making healthy food choices especially for those who may be on a weight management program and for consumers with food allergies (Sommer *et al.*, 2012)

According to the Ghana food laws, 1992, date markings (expiry date, use by date and best before) are mandatory. They give an indication of the minimum durability of the product. They are important as safeguard against food which might be unfit for consumption. The laws allow manufacturers to use them alternatively except for drugs which mandatorily need to use the expiry date. In this current study, best before date was popular among most of the products examined. This was followed by expiry dates. 'Use by' was least in terms of popularity, probably because most of these products were not of a highly perishable nature. Reports suggest that date markings are useful in identifying how perishable a food product might be. 'Use by' date mark is for foods of a highly perishable nature. It means that the food should be used by the end of the date provided. Keeping food beyond that date could pose a hazard to health. However, "best before" date mark is used on foods that can keep safely for a longer period of time. When the date is exceeded, it might not mean that the food will be dangerous but rather that it may no longer be at its best (to CAC/ WHO/FAO, 2007; Robinson *et al.*, 2001).

In all the five categories of food products examined in this study, over 90% of the products provided date markings. Date markings enable consumers to make safe decisions and optimum use of food in order to reduce their risk of food borne diseases (Department for Environment, Food and Rural Affairs, 2011). As such though this prevalence rate may seem encouraging, the very important nature of this information to the health and wellbeing of consumers renders the current compliance rate woefully inadequate. One study reported that 53% of consumers would never eat fresh fruit and vegetables past the "best before" date and 56% would never eat bread and cakes past the "best before" date. Twenty-one percent would never "take a risk" with any food close to its date, even if it appeared fine (Defra, 2010). Food regulatory institutions in Ghana need to improve their monitoring of products on the market to enforce 100% compliance. Generally, the imported food products showed a higher compliance for the various labelling requirements than the locally made ones. This agrees

with the findings of the Food Standards Australia New Zealand (2006) where it was indicated that more imported labels were consistent with all label elements than non-imported labels. In contrast, the reverse was indicated by the same study in 2005, where more non-imported labels were consistent with all label elements than imported labels (Food Standards Australia New Zealand, 2005). Out of the five food categories selected, Fruit juices and carbonated drinks, dairy products and meat and fish products showed better compliance patterns than breakfast cereals and confectionery. This may be due to the fact that former products are relatively more perishable than the latter and will require extra caution in order to minimize the risk of food borne illnesses (Raab, 2004). This however contradicts a study by Washi, in 2001 where 'Cereal products' had better compliance than 'Dairy products.'

Conclusion

Compliance to labelling requirements were to varied extents with better compliance in Fruit juices and carbonated drinks, dairy products and meat and fish products compared to breakfast cereals and confectionery. Imported food products generally showed better compliance compared to locally made food products. For all the products, 'name of product' and 'prominent lettering of product name' were most complied to whilst the least complied requirement was 'Instructions or Directions for use.' Mandatory requirements were better complied than conditional ones. It is recommended that the Food and Drugs Authority and the Ghana Standards Authority should step up their monitoring of products on the market to ensure consumer safety and health.

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