



Short communication

Food allergen labeling in developing countries: Insights based on current allergen labeling practices in Malawi



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ARTICLE INFO

Article history:

Received 25 April 2017

Received in revised form

6 August 2017

Accepted 12 August 2017

Available online 13 August 2017

Keywords:

Food allergy

Allergen labeling

Food labeling

Allergen regulation

Allergic consumer

ABSTRACT

Food allergen labeling is an important tool in minimizing the risk of exposure to foods allergens and the resultant adverse effects for individuals with food allergies. Unlike in the industrialized countries, there have been very few studies that have scrutinized food allergen labels and analyzed the robustness of food allergen regulation in developing countries. In the present study, food allergen labeling of 105 super-market food products in Malawi were evaluated. Furthermore, Malawi's allergen labeling regulation was compared with Codex general standard on labeling, and regulations in force in the E.U, U.S, and Republic of South Africa. About 54.3% of the surveyed products carried the special allergen declaration in addition to the declaration on the list of ingredients, 23.8% used special emphasis (bolding, italic, contrasting color and enlarged font) when declaring allergens on the ingredient list, and 28.6% used precautionary allergen labeling (PAL). Notably, none of the surveyed locally manufactured products had any of these features. However, all the surveyed products complied with the allergen labeling requirements stipulated in Malawi General Standard for Labeling of Prepacked Foods implying that the Malawi standard is not protective enough. Moreover, Malawi's allergen labeling regulation was found to be the least demanding. Although this study is based on data from Malawi, trends and implications for standards development may be applicable to other developing countries especially those in Sub-Saharan Africa.

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1. Introduction

Food allergy is a significant global public health issue known to affect up to 5% of children and 4% of adults in western countries (Sicherer & Sampson, 2010). Food allergies occur when one's immune system adversely reacts to food proteins, resulting in severe and life-threatening conditions (Derr, 2006; Sicherer & Sampson, 2006). Unfortunately, there is no cure for food allergy yet. The best allergy management strategy, so far, is for the allergic individuals to strictly avoid foods containing the allergens (Allen et al., 2014; Simons, Weiss, Furlong, & Sicherer, 2005). For manufactured products, proper food allergen labeling is, therefore, a lifesaver for allergic individuals.

To protect allergic consumers from accidental consumption of

allergenic foods, various regulatory bodies, especially in developed countries, have developed allergen labeling regulations and guidelines (Gendel, 2012). Likewise, studies are regularly carried out to assess adequacy of the regulations (Anandan & Sheikh, 2005; Derr, 2006; Gendel, 2012; Taylor & Hefle, 2006), compliance with such regulations by manufacturers (Pieretti, Chung, Pacenza, Slotkin, & Sicherer, 2009; Van Hengel, 2007), and the impact of the food allergen labeling practices on allergic consumers (Joshi, Mofidi, & Sicherer, 2002; Simons et al., 2005). Unfortunately, there has been sporadic research focusing on food allergies in developing countries (Obeng, Hartgers, Boakye, & Yazdanbakhsh, 2008). Consequently, there is a misconception that food allergies are just a Western phenomenon. However, the few studies in developing countries have shown that food allergies have no boundaries (Van Ree & Yazdanbakhsh, 2007; Van der Poel, Chen, & Penagos, 2009).

The present study was therefore carried out to gain insight into food allergen labeling practices in developing countries and the

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robustness of existing food allergen labeling regulations using a case study of Malawi, a country in the southern Africa. In this respect, the detail of food allergen labels of selected food products, found in Malawian supermarkets, was scrutinized. Furthermore, Malawi's allergen labeling regulation was compared with Codex General Standard for the Labeling of Prepackaged Food (Codex, 2001), E.U regulation No. 1169/2011 (EC, 2011), U.S Food Labeling and Consumer Protection Act (FALCPA) (U.S-Code, 2004), and South Africa's Regulation Relating to the Labeling and Advertising of Foods (RSA, 2014).

2. Materials and methods

A survey of 105 commercially packaged products was conducted in Lilongwe, Malawi, to determine current allergen labeling practices. Among the surveyed products were different brands of biscuits (100), and baby foods (5) found in one of the biggest supermarkets in Malawi. Biscuits and baby foods were specifically chosen as they are known to contain multiple ingredients of which some are common allergens (Davidson, 2016; IFR, 2017). Most of the products (74%) were imported from South Africa, Zambia, Zimbabwe, India, China and Europe. For each product, the surveyors collected information after reviewing the label. This included the product and brand names, country of origin, and a list of ingredients. Likewise, special emphasis on known allergens on the list of ingredients, how such emphasis was done, any special declaration of allergens, and other advisory statements were captured. Allergen labeling compliance was determined by comparing results with stipulated requirements in MS 19; Malawi General Standard for Labeling of Prepacked Foods (MBS, 2001). Robustness of Malawi's food allergen labeling regulation was assessed through a comparison with Codex General Standard for the Labeling of Prepackaged Food (Codex, 2001), E.U regulation No. 1169/2011 (EC, 2011), U.S. Food Labeling and Consumer Protection Act (FALCPA) (U.S-Code, 2004), and South Africa's Regulation Relating to the Labeling and Advertising of Foods (RSA, 2014). Summaries of descriptive statistics were generated using SPSS version 20.

3. Results

3.1. Declared allergens

Ten allergens were identified on one or more of the surveyed products. These were milk, wheat, soy, eggs, oats, rye, barley, sesame, peanuts, and sulfites. As shown in Fig. 1, wheat was the most

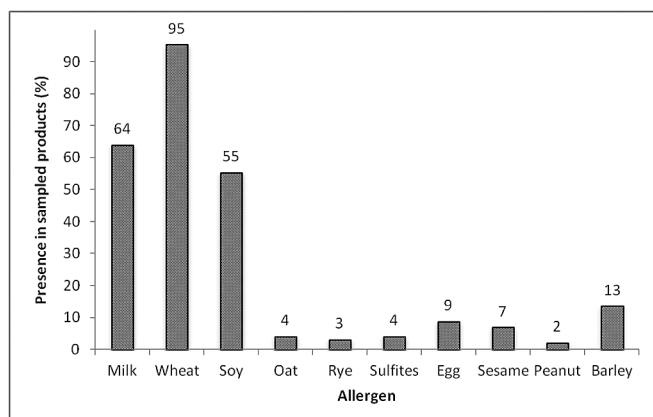


Fig. 1. Declared allergens on labels of the sampled products.

frequently declared allergen (95%) followed by milk (64%) and soy (55%). Biscuits contained a broad range of allergens compared to baby foods (Fig. 2). However, wheat, soy, and milk were still the most frequently declared allergens. Notably also is the broad range of allergens in imported biscuits compared to locally manufactured biscuits. Unlike imported biscuits, barley, oats, sesame, rye, peanuts and sulfites were not declared on any label of the locally manufactured biscuits. The number of declared allergens in a single product ranged from one to five as shown in Fig. 3. Imported biscuits showed the highest number (5) of allergens in a single product as compared to locally manufactured biscuits which mostly declared just one allergen. The surveyed baby foods mostly contained three allergens.

3.2. Allergen labeling practices

3.2.1. Declaration and emphasis of allergens on list of ingredients

All the labels for the sampled products had a list of ingredients. Allergens were included on the list of ingredients of all the products surveyed. Ingredient lists of locally manufactured products did not emphasize allergens in any way. Contrariwise, special emphasis was used for allergens declared on 25% and 67% of the imported biscuits and baby foods, respectively. The styles of emphasis used are shown in Table 1. Putting the font in bold was the most frequently used style of emphasis.

3.2.2. Special declaration of allergens

A separate allergen statement, immediately after or adjacent to list of ingredients, was not included on any of the locally manufactured products while 73% of the imported products carried the special allergen declaration, in addition to the declaration on the list of ingredients. Although the styles for special allergen declaration vary, a "Contains" statement was noted on all the surveyed products that used this kind of declaration.

3.2.3. Precautionary Allergen Labeling (PAL)

There was no use of PAL on any of the locally manufactured products. Contrariwise, 38.7% of imported biscuits and 20% of the imported baby foods had a "May Contain" precautionary statement. Other precautionary statements like "Manufactured on shared equipment with" or "Manufactured in a shared facility with" were not used on any of the surveyed products.

3.3. Compliance with Malawi's allergen labeling regulation

All the products surveyed complied with the allergen labeling requirements stipulated in MS 19; Malawi General Standard for Labeling of Prepacked Foods (MBS, 2001). The mandatory allergens (Milk, Egg, Fish, Crustaceans, Tree nuts, Peanuts, Soy, Wheat, Oats, Rye, Barley, and Sulfites ≥ 10 mg/kg), where applicable, were declared on the list of ingredients as required.

3.4. Robustness of Malawi's food allergen labeling regulation

A comparison matrix for the allergen labeling regulations of interest is given in Table 2. Malawi's food allergen labeling regulation is similar to Codex regulation but differs significantly from the E.U, U.S and RSA regulations, respectively. There are 12 priority allergens, under Malawi's regulation, that must be declared on the label of food products. The list of priority allergens in Malawi contains few items compared to the list of priority allergens listed under E.U and RSA regulations but slightly more than those under U.S regulation. However, milk, eggs, fish, crustaceans, tree nuts, peanuts, soy and wheat are common under all the selected regulations. Unlike under E.U, U.S and RSA regulations, Malawi's

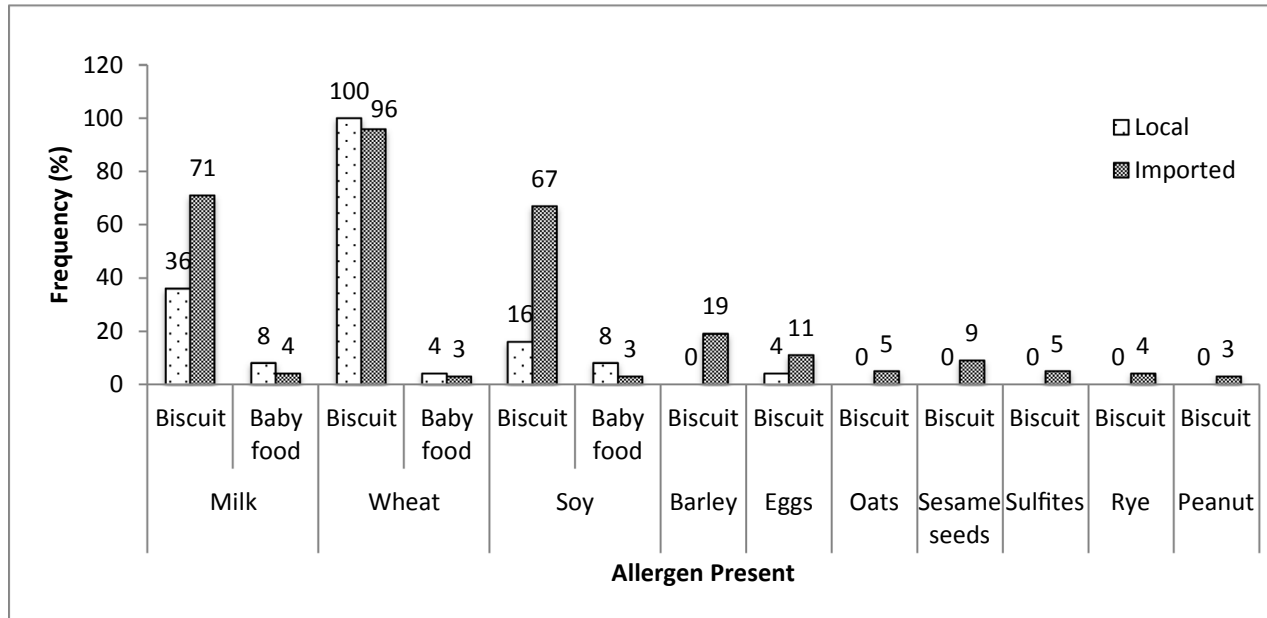


Fig. 2. Type of allergens present in the sampled biscuits and baby foods.

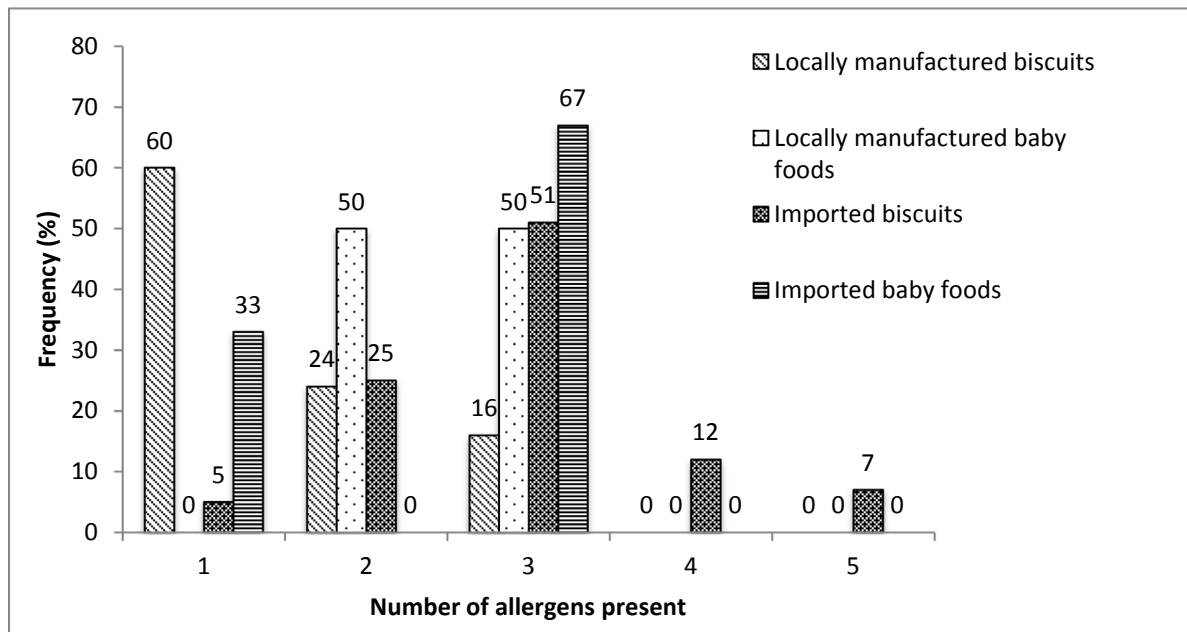


Fig. 3. Number of allergens present in a single product.

Table 1
Type of emphasis used when declaring allergens on the list of ingredients.

Product	Type of Emphasis	Frequency
Biscuits (n = 75)	Contrasting color	3
	Italics	2
	Bold	16
	Enlarged Font	2
Baby Foods (n = 3)	Bold	2

regulation does not have guidelines on how the food allergens must be declared other than that allergens should be included on the list

of ingredients. Likewise, there are no guidelines on when and how to use some form of emphasis when declaring allergens. Furthermore, Malawi's regulation is silent on use of PAL. Out of all the regulations under consideration, only RSA and E.U regulations have provisions for regulating use of PAL. However, unlike in RSA, regulation on use of PAL has not been effected yet in E.U countries.

4. Discussion

The MS 19; Malawi General Standard for Labeling of Prepacked Foods was developed using Codex General Standard for the Labeling of Prepackaged Food as a reference standard (MBS, 2001). The similarity between the two regulations was therefore not

Table 2
Comparison of matrix of the selected food allergen regulations.

Guideline	Malawi	Codex	European Union	United States	South Africa
Mandatory Allergens for Declaration					
Milk	✓	✓	✓	✓	✓
Egg	✓	✓	✓	✓	✓
Fish	✓	✓	✓	✓	✓
Crustaceans	✓	✓	✓	✓	✓
Tree nuts	✓	✓	✓	✓	✓
Peanuts	✓	✓	✓	✓	✓
Soy	✓	✓	✓	✓	✓
Wheat	✓	✓	✓	✓	✓
Oats	✓	✓	✓		✓
Rye	✓	✓	✓		✓
Barley	✓	✓	✓		✓
Spelt		✓	✓	✓	✓
Celery			✓		
Mustard			✓		
Sesame			✓		
Lupin			✓		
Mollusks			✓		✓
Kamut			✓	✓	✓
Sulfites ≥ 10 mg/kg	✓	✓	✓		✓
Instructions on allergen declaration					
Included on the list of ingredients	✓	✓	✓	✓	✓
Identified parenthetically on list of ingredients			✓	✓	✓
A separate allergen statement immediately after or adjacent to list of ingredients				✓	✓
All allergens on list of ingredients listed again if a separate allergen statement is used				✓	
Same font size as that used on list of ingredients if a separate allergen statement is used				✓	
Special emphasis of allergens on list of ingredients					
Contrasting color			✓		
Contrasting font type or size			✓		
Contrasting style (e.g. Bold, Italics)			✓		✓
Use of parenthesis for further qualification of less common food ingredient names			✓	✓	✓
Use of icons or symbols accompanied with words and numbers			✓		
Use of precautionary allergen labeling regulated		✓ ^a		✓	

Source: Authors' compilation using Codex General Standard for the Labeling of Prepackaged Food (Codex, 2001), E.U regulation No. 1169/2011 (EC, 2011), U.S Food Labeling and Consumer Protection Act (FALCPA) (U.S-Code, 2004), and South Africa's Regulation Relating to the Labeling and Advertising of Foods (RSA, 2014).

^a According to Article 36.3(a) (EC, 2011), the European Commission must adopt implementing measures detailing the application of the requirements related to voluntary information on "may contain" labeling (i.e. the possible and unintentional presence in food of substances or products causing allergies or intolerances). This has not been implemented yet.

surprising. The priority allergens in Malawi were chosen on the basis that they are known to cause hypersensitivity as determined by the Codex Alimentarius Commission (MBS, 2001). However, although the commission acknowledges that the foods which are common causes of allergic reactions differ between geographical areas as a result of dietary preferences, Malawi has not conducted any independent assessment to determine its priority allergens (Codex, 2001; MBS, 2001). Until such an assessment is done, it cannot be ascertained whether the 12 priority allergens in Malawi are sufficient or not. Contrariwise, the lists of priority allergens, under E.U and U.S regulations, were compiled based on results of their independent studies (EC, 2011; U.S-Code, 2004). The criterion used in RSA is not known but the difference of their priority allergens with the Malawi, U.S and E.U regulations suggests that they might have done their own assessment.

Unlike in Malawi where use of PAL is not mentioned anywhere in the labeling regulation, under E.U and U.S regulations, at least manufacturers are required not to use PAL as a substitute for Good Manufacturing Practices (GMP) (EC, 2011; U.S-Code, 2004). Manufacturers are encouraged to do risk assessment and use PAL when results show that the allergen might be present in such an amount as to pose a reasonable risk. Nevertheless, documentation of the risk assessment is not required under U.S and E.U regulations as is the case in RSA. Some surveyed locally manufactured products were from factories well known for processing other foods containing common allergens. The fact that none of the surveyed locally manufactured products used PAL could mean two things.

Either, the manufacturers have efficient and effective GMP in place to mitigate adequately the risk of cross contamination or the allergic consumers in Malawi are at risk of consuming allergens unknowingly.

Compliance of all the surveyed products with MS 19 requirements needs to be considered with caution. Inclusion of a list of ingredients is a mandatory food labeling requirement in Malawi (MBS, 2001). However, the use of such a minimum requirement for allergen labeling may not be sufficient. For instance, use of the special emphasis styles helps an allergic consumer not to miss vital allergen information on the label (FSA, 2015). Likewise, the use of parenthesis for further qualification of a less common food ingredient is recommended to prevent accidental consumption of allergens that have been described using technical, scientific or uninformative terms (U.S-Code, 2004). It is unfortunate then that use of special emphasis, when declaring allergens, is not a requirement in Malawi. However, in the absence of regulating requirement, it is not surprising that all the surveyed locally manufactured products did not use any special emphasis when declaring allergens. The silence of Malawi's regulation on use of special emphasis could put allergic consumers at risk of accidental consumption of allergens; especially those described using technical, scientific or uninformative terms. It is even more worrisome that current Malawi standards for biscuits and high protein baby foods, respectively, have not been revised to incorporate allergen labeling requirements (MBS, 1988, 1989). The need for a more robust food allergen labeling regulation in Malawi cannot be

overemphasized.

5. Conclusion

The right to information is one of the most important foundations for consumer protection. Given the potentially serious consequences which consumption of allergenic ingredients by vulnerable consumers entails, labeling must be done in such a way that allergens are easily noticeable by the consumers. The present study has revealed that Malawi's allergen labeling regulation is less demanding, compared to U.S, E.U and RSA regulations, and is not protective enough. The compliance of all the surveyed products with Malawi's allergen labeling requirement, do not imply that allergic consumers are well protected. There is an urgent need for a robust allergen labeling regulation in Malawi to protect allergic consumers.

Author contributions

APG and LM developed the idea for the paper. EM collected the data and performed data analysis in consultation with LM, APG and PK and drafted the first version of the paper. All authors refined the draft and commented on the final version of the paper and approved the contents.

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Food Control

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Corrigendum

Corrigendum to ‘Food allergen labeling in developing countries: Insights based on current allergen labeling practices in Malawi’ [Food Control 84 (2018) 263–267]

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The authors regret the use of Kamut instead of Khorasan wheat in Table 2 of the article. Although Kamut is mentioned in the 2014 South Africa's regulation relating to the labeling and advertising of foods, it is a registered trademark used to distinguish an ancient variety of wheat

commonly referred to as “Khorasan”. Regulation (EU) No. 1169/2011 also mentioned Kamut but, the regulation was amended and Kamut has been replaced with Khorasan wheat. The authors would like to apologise for any inconvenience caused.

DOI of original article: <http://dx.doi.org/10.1016/j.foodcont.2017.08.007>

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<https://doi.org/10.1016/j.foodcont.2018.05.037>

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Please cite this article as: Gama, A.P., Food Control (2018), <https://doi.org/10.1016/j.foodcont.2018.05.037>