

Educational instruments for food safety and nutrition

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Introduction

Foodborne diseases (FD), caused by consumption of foods contaminated with microorganisms or chemicals, as well as unhealthy diets represent an important cause of morbidity and mortality worldwide. Information from FD epidemiological surveillance, integrating human, veterinary and environmental areas are essential to identify, FD risk and promoter factors, to support risk management and burden mitigation activities to prevent these diseases. Prevention of diseases related to food ingestion can be achieved by education and promotion of safe food practices next to target populations, such as food handlers, health educators and students.

Purpose

Develop, adapt, publish and disseminate school educational materials on food safety, nutrition and labelling for different school levels, in order to empower students to make more informed choices and to adopt better and safer food practices aiming for a healthier life.

Material and Methods

Different educational materials were developed, adapted and implemented based on the following resources:

A – Food Safety: The results of foodborne outbreak (FBO) investigation data analysis performed at the National Institute of Health (INSA), between 2009 and 2013, showed that the majority of FBOs occurred in public places and secondly at home, being the mixed meals the major food vehicle contaminated^{1,2}. FBO occurrence risk/contributive factors, represented in Figure 1, were attended on the development of the Guide of Consumer Good Practices³ (Figure 2). All these resources have scientifically guided the elaboration of educational materials for foodborne outbreak (FBO) prevention.

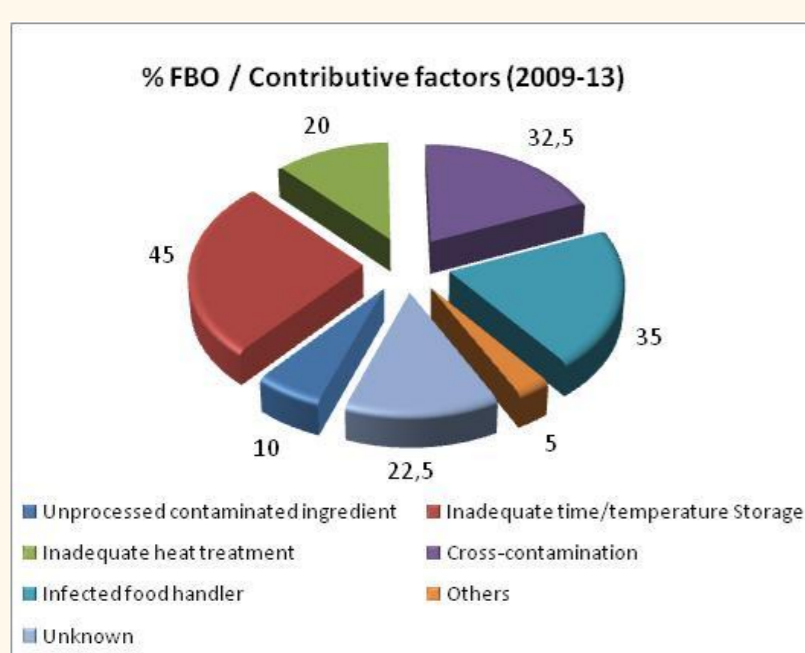


Figure 1: FBO contributive factors



Figure 2: Guide of Consumer Good Practices

B - Food nutrition: The Portuguese Food Composition Database (PFCDDB)⁴ (Figure 3), edited and disclosed by INSA, is the reference table of food composition in Portugal. Created in 1961, it is available on printed support, Excel, CD-Rom and online.



Figure 3: Portuguese Food Composition Table

C - Food labelling: Food labels and food legislation and guidelines, namely the Regulations on the provision of food information to the consumer and on nutrition and health claims made on foods.

All educative material were adapted to the curricula of different teaching levels through team work with teachers, are available on INSA site and were released through oral meetings to the teachers in different geographic areas of Portugal.

Results and Discussion

A – Food safety: The educational material developed to promote foodborne outbreak prevention is composed by: 1) Guide of Consumer Good Practices - food safety from the supermarket to the table⁴; 2) two PowerPoint's, one flyer and one questionnaire to assess the effectiveness of the classes (Figure 3) They are being disseminated in school meetings and are also available on-line at INSA website .

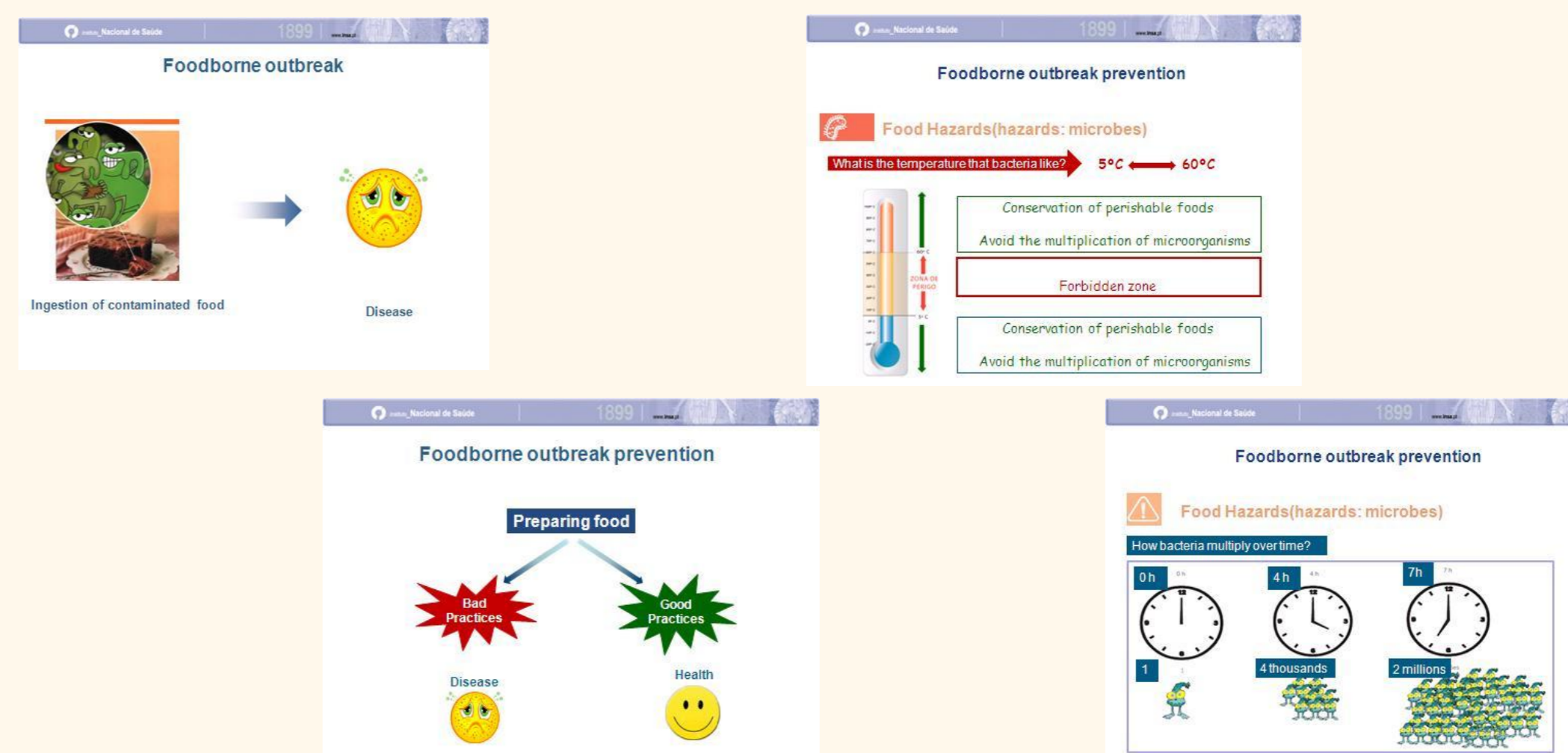


Figure 3: Educational material (examples)

B – Food nutrition: The flyer indicates the instructions and the benefits of using the PFCDDB in the assessment of nutrients intake by students, in order to explain their responsibility in their own nutritional state. In Figure 4 two examples of the nutritional composition of breakfasts potentially/usually eaten by students in Portugal, calculated using PFCDDB are presented .

	Breakfast 1					Breakfast 2						
	Semi skimmed milk	Bread	Cheese	Apple	TOTAL	Whole milk	Chocolate powder	Bread	Cheese	Butter	Chocolate bar	TOTAL
Portion	1 cup	1 unit	1 slice	1 unit		1 cup	1 spoon	1 unit	1 slice	1 small package	1 unit	
Portion weight (g)	272	75	18	89	454	272	12	75	18	10	40	427
Energy (kJ)	541	923	238	228	1929	707	236	923	238	304	920	3328
(kcal)	128	218	57	53	456	169	56	218	57	74	221	794
Total fat (g)	4	2	4	0	11	10	2	2	4	8	14	40
of which saturates (g)	2	0	2	0	4	5	2	0	2	5	8	21
Carbohydrates (g)	13	43	0	11	68	13	8	43	0	0	21	85
of which sugars (g)	13	2	0	11	26	13	7	2	0	0	21	43
Protein (g)	9	6	5	0	20	8	1	6	5	0	3	23
Salt (g)	0.3	1.1	0.4	0	1.8	0.3	0	1.1	0.4	0.2	0.1	2.1

Figure 4: Nutritional composition of two different usual Portuguese students breakfasts

C – Food labelling: the educative material helps to understand the content (Figure 5) of the food label and how to use this information to make informed choices in the acquisition, storage and preparation of foodstuffs, in order to benefit from a healthy diet.

Read the label FIRST!

Useful food information in the label

- name of the food;
- list of ingredients;
- any ingredient or processing aid causing allergies or intolerances;
- quantity of certain ingredients or categories of ingredients;
- net quantity of the food;
- date of minimum durability or the 'use by' date;
- any special storage conditions and/or conditions of use;
- name or business name and address of the food business operator;
- country of origin or place of provenance where provided;
- instructions for use where it would be difficult to make appropriate use of the food in the absence of such instructions;
- with respect to beverages containing more than 12 % by volume of alcohol, the actual alcoholic strength by volume;
- nutrition declaration

Nutrition Information

Per	100 g	Portion (50 g)	% RI*
Energy	1392 kJ 333 kcal	696 kJ 166 kcal	8 %
Fat	7.9 g	4.0 g	6 %
of which saturates	5.1 g	2.5 g	13 %
Carbohydrate	24 g	12 g	5 %
of which sugars	8.7 g	4.3 g	5 %
Protein	40 g	20 g	40 %
Salt	0.09 g	0.04 g	1 %

* Reference intake of an average adult (8400 kJ / 2000 kcal)

Figure 5: Nutrition declaration (example)

Conclusions

Compilation and analysis of data produced by epidemiologic and laboratory investigation at INSA regarding food composition and foodborne outbreaks complemented with food legislation information were useful for the scientific evidence to elaborate the educative materials by directing their contents, design and implementation according to the target populations.

The collaboration between the National Institute of Health and Schools promotes the students' education to achieve a generation more aware for the importance of food safety and healthy food choices in their life and, in this way, to reduce morbidity and mortality linked to the foodborne diseases and unhealthy diets.

References

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