



Development of the Spanish Healthy Food Reference Budget for an adequate social participation at the minimum

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Abstract

Objective: It has been observed that diet quality and food choices vary depending on socio-economic status (SES), especially when measured through income and educational level. Although the reasons behind these differences are multiple, diet cost is a critical determinant in those groups that spend a higher proportion of their budget on food. Reference budgets are priced baskets containing the minimum goods and services necessary for well-described types of families to have an adequate social participation. In the current paper we describe the development and content of the Spanish Healthy Food Basket (SHFB).

Design: National dietary guidelines were translated into monthly food baskets. Next, these baskets were validated in terms of acceptability and feasibility through focus group discussions, and finally they were priced.

Setting: The focus group discussions and the pricing were performed in Barcelona, Spain.

Subjects: Twenty adults aged 30–50 years from different SES backgrounds and their children aged 2–22 years participated in three discussion groups.

Results: The SHFB complies with the dietary recommendations for the Spanish population. The monthly cost of this basket ranges from 131.63 € to 573.80 € depending on the type of family.

Conclusions: The SHFB does not have the purpose of prescribing what people should eat, but of estimating a minimum budget threshold below which healthy eating is not possible for well-described types of families. Thus, the SHFB is an educative guide on how to plan a healthy food budget and orient policies designed to guarantee food access and reduce SES inequalities.

Keywords
Food budget
Reference budgets
Low-income families
Food insecurity

Diet is one of the main risk factors for chronic diseases such as obesity, CVD, type 2 diabetes and some sorts of cancer^(1,2). Since improving diet quality is one of the main priorities in the public health agendas of different countries and institutions, several investigations have analysed which factors influence food choice^(3–6). These studies show that the main motivations in the selection of foods vary depending on socio-economic status (SES), which generates a social gradient in diet quality^(7,8). The consumption of whole grains, lean meats, fish, low-fat dairy products and fresh fruit and vegetables has been consistently associated with higher SES groups, whereas the intake of processed meats, refined grains, sodium and added fats is associated with lower SES groups in different developed countries^(9,10), including Spain⁽¹¹⁾. Although some products such as fish, fresh fruit and vegetables are typically perceived as more expensive, familiarity with foods is highly relevant in low-income groups. In contrast,

the food choices of people from higher SES have been associated with a greater consideration of the effects of diet on health⁽⁴⁾.

The term 'food insecurity' is defined as not having access to sufficient, safe, nutritious food to maintain a healthy and active life⁽¹²⁾. Food security includes three concepts: (i) food availability, i.e. having sufficient quantities of foods available on a consistent basis; (ii) food access, i.e. having sufficient resources to obtain appropriate foods for a nutritious diet; and (iii) food use, i.e. appropriate use of foods, based on knowledge of basic nutrition and care, as well as adequate water and sanitation. With the recent global economic crisis, some consumption patterns have changed and the prevalence of food insecurity has increased in many developed countries^(13–15).

In Spain, three main changes have been observed during the national economic crisis⁽⁷⁾. First, there has been

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a variation in the establishments where families acquire their food products. In 2007 'good value for money' was the main motivation to choose where to do grocery shopping for only 34.1% of consumers, whereas this percentage increased to 62.7% in 2012. Second, households have lowered the volume of food products they buy. Third and last, there have been changes in the kinds of products purchased, tending to replace the most expensive foods for cheaper alternatives^(7,11). There has been a decrease in the consumption of meat, fish and, to a lesser extent, fresh fruit and vegetables. Conversely, the intake of pulses has risen considerably. This phenomenon implies that while energy intake may meet requirements, deficiencies in terms of specific nutrients have increased⁽¹⁶⁾. The frequency of eating out has also dropped.

The economic difficulty in satisfying the need for food has increased the number of people turning to social organizations providing food. Although requests for food from the different food banks in Spain increased fivefold from 2007 to 2012, these organizations could provide food to only 1.5 million people, twice as many as in 2007. Four per cent of the Spanish population lacks the required resources to be fed properly⁽¹⁷⁾. In the case of children, this problem is particularly relevant due to their higher vulnerability^(14,18,19).

Therefore, non-governmental organizations and food banks have become essential for an important part of the population. Nevertheless, the increase in demand for these services, along with the actual provision mechanisms in these institutions makes it very difficult to provide a balanced diet^(14,20). At the same time, it should be noted that the promotion of expensive foods to low-income people without taking into account the high cost of these products is not likely to be successful^(9,21). In this context, reference budgets (RB) can help people make healthy choices with a minimum budget.

In its origins, the budget method was applied to the study of living conditions and poverty, especially of working-class families. The first budget studies date from the early 20th century in the USA and Britain^(22,23). In particular, in 1901, Rowntree determined that the level of earnings needed to maintain physical efficiency was a measure of poverty in York, UK, based on developing a diet for nutritional adequacy, among other needs⁽²⁴⁾. Rowntree's approach had an impact on subsequent budget studies, although the standards of living developed using the budget method have evolved to include not only physical needs but also social needs^(23,25).

The interest in budget research was re-launched in the 1960s in the USA. At that time the Department of Agriculture developed the so-called 'economy food plans', which estimated the weekly costs of food for different family types needed for temporary or emergency use based on nutritional criteria and preferences of US families, without including eating out. Based on these studies, Orshansky established that poverty thresholds for

various types of families should be three times the cost of economy food plans because families spend one-third of their after-tax income on food⁽²⁶⁾. In the past 40 years, the European Member States that have developed three or more budgets according to Storms *et al.*⁽²⁷⁾ are: Belgium, Croatia, Finland, Germany, Greece, Ireland, Poland, Portugal, Romania, the Netherlands, Slovenia, Sweden and the UK. We can also find budget studies in other non-European countries, such as Australia, Norway, Canada and New Zealand^(23,28,29). Although throughout the 20th century and until today budget studies have applied different methodological approaches, the majority of these budget studies have aims similar to those of the first budget studies, namely poverty measurement and assessment of an adequate standard of living⁽²⁷⁾.

Since the 2010s, RB have been emphasized to be used as tools to improve poverty measurement and assess income adequacy in the European Member States^(30,31). The development of RB in a cross-nationally comparable way could provide a basis to orient social policies⁽³²⁾. This is precisely one of the goals of the project 'Poverty Reduction in Europe: Social Policy and Innovation' (ImPRovE)⁽³³⁾, an international research project that aims to study poverty, social policy and social innovation in Europe.

In ImPRovE, cross-nationally comparable RB for social participation have been developed for six countries: Belgium, Finland, Greece, Hungary, Italy and Spain. In this project, RB are defined as priced baskets of goods and services that represent the minimum necessary resources for well-described types of families to have an adequate social participation. In this context, participating adequately means that people would have the essentials to develop their various social roles in a particular society^(32,34). The use of a common theoretical framework and methodology allows one to explain cross-national variations in the RB focusing on several parameters, including: the differences in the institutional context, the climate and geographical conditions, the culture and the availability, quality and price of goods and services in each society⁽³²⁾.

The purpose of the present paper is to describe the development and applicability of the Spanish Healthy Food Basket (SHFB) within the Spanish RB, built as part of ImPRovE. As far as we know, this is the first attempt to do a comprehensive estimate of the cost of a healthy diet for different types of families in Spain. In addition, RB could be applied as an educative instrument not only in the area of nutrition but also in financial counselling and health advice. Furthermore, RB provide a means for social workers to assess family needs⁽³²⁾.

Methods

In order to construct this minimum RB Storms *et al.*⁽³⁴⁾ base their work on Doyle and Gough⁽³⁵⁾, who identify ten



intermediate needs that must be covered before people can fully participate in society: (i) healthy food; (ii) suitable clothing; (iii) personal hygiene; (iv) accessible health care; (v) adequate housing; (vi) security in childhood; (vii) meaningful social relations; (viii) lifelong learning; (ix) rest and relaxation; and (x) mobility.

Following the methodology described in Storms *et al.*⁽²⁷⁾, we used a three-step procedure to elaborate the SHFB: (i) translation of the intermediate needs into a concrete basket of goods and services; (ii) pricing of these goods and services; and (iii) assessment of the acceptability of the basket through focus group discussions; baskets were adjusted according to the latter.

The SHFB gathers the necessary goods and services to guarantee an adequate nutrition. Healthy eating corresponds to one of the ten intermediate needs identified by Doyle and Gough⁽³⁵⁾ as indispensable to achieve a minimum living standard that allows people to fully participate in society. We should clarify that social, psychological and emotional functions of food were included in other baskets, namely in the ones corresponding to security in childhood, maintaining significant social relations, and rest and leisure^(32,34).

During the development of the common methodology some important decisions were made in order to ensure a common start for all the countries. In the case of the SHFB, these decisions included the following.

1. To develop RB for big urbanized areas with a wide public transportation network: Antwerp, Athens, Barcelona, Budapest, Helsinki and Milan. In the case of the food basket, this point is particularly relevant in terms of the pricing of the items and the frequency with which people rely on self-production for their feeding.
2. To develop RB for six household types: (i) single man (35–45 years old); (ii) single woman (35–45 years old); (iii) couple (man and woman, 35–45 years old); (iv) single man (35–45 years old)+one child (primary-school boy, 10 years old); (v) single woman (35–45 years old)+one child (primary-school boy, 10 years old); (vi) couple (35–45 years old)+two children (primary-school boy, 10 years old+secondary-school girl, 14 years old).
3. To consider that all the individuals are healthy and well-informed, autonomous persons.
4. To develop RB that could serve both working and non-working adults. Given the great variability of employment characteristics and the use of time of non-working people, we decided that making such a difference was not possible.

The adaptation of the intermediate need for healthy foods into a basket of goods and services was made by a nutritionist, setting out from the current dietary recommendations for Spain. The Food-Based Dietary Guidelines (FBDG) for the Spanish population, set by the Spanish

Society of Community Nutrition (Sociedad Española de Nutrición Comunitaria; SENC), were the starting point for the SHFB⁽³⁶⁾. These recommendations are built upon the current scientific evidence on the nutritional needs of healthy individuals and take into account the main diet-related public health challenges as well as the cultural habits of the Spanish population. Therefore, they provide orientation about the necessary average portions and frequencies of consumption of different foods in order to promote healthy eating and regular physical activity. As these guidelines specify recommended portions and frequencies of intake for adults only, we relied on the dietary objectives laid down in the Guide for Families of the PERSEO Program (Pilot Programme in Schools for Health, Physical Exercise and against Obesity)⁽³⁷⁾ to determine the types, amounts and frequencies of the different food products to be included in the case of children and adolescents. The recommendations are summarized in Table 1.

As a rule, we included the foods that according to the Spanish National Survey on Nutritional Intake⁽¹¹⁾ are consumed below the recommendations in greater proportion than those whose intake is excessive. At the same time, as we intended to compose a balanced food basket for a minimum budget, the cheapest option was selected from the available preferential products. For instance, although olive oil is the recommended fat in Spain due to its cardiovascular benefits and because it is abundantly produced in our country, we also included small amounts of sunflower oil (because it is cheaper) as well as nuts (because they are consumed below the recommendations). The same rationale was applied to the inclusion of fresh vegetables *v.* frozen or canned vegetables; and fresh *v.* frozen fish.

In order to determine the quantity of each food product for each profile (boy, girl, man, woman), we started from the amounts mentioned in Table 1, establishing the following eight categories: (i) liquids; (ii) starches; (iii) vegetables; (iv) fruit; (v) dairy; (vi) meat/fish/eggs; (vii) fat; and (viii) residual. For the first seven, we included the most common foods consumed in Spain, in the frequencies recommended in the FBDG. The Spanish FBDG do not provide specific recommendations for each gender; yet this is known as one of the factors that determine nutritional needs. Thus, to determine the amount of each food product to give to each profile, we took the lower portion threshold as a reference for women, while the upper threshold was applied to men. For children, recommendations are formulated for the age intervals of 6–10 years and 11–14 years; therefore, the upper reference was used in both our cases (10-year-old boy and 14-year-old girl).

In order to compose well-varied baskets of fruits, vegetables, meat and fish, we included at least seven different food products per week and the choice of these specific products was made based on their price.

Table 1 Food-based dietary guidelines used to develop the Spanish Healthy Food Basket

	Recommended frequency	Portion weight for adults ⁽³⁶⁾	Portion weight for child (6–10 years old) ⁽³⁷⁾	Portion weight for child (11–14 years old) ⁽³⁷⁾
Potatoes, rice, bread, pasta	4–6 portions/d	60–80 g rice, pasta 40–60 g bread 150–200 g potatoes	60–80 g rice, pasta 40–60 g bread 150–200 g potatoes 30 g breakfast cereals	60–80 g rice, pasta 40–60 g bread 150–200 g potatoes 30 g breakfast cereals
Vegetables	≥2 portions/d	150–200 g	200 g	200 g
Fruits	≥3 portions/d	120–200 g	120–150 g	120–150 g
Olive oil	3–6 portions/d	10 ml	10 ml	10 ml
Dairy products	2–4 portions/d	200–250 ml milk 200–250 g yoghurt 40–60 g mature cheese 80–125 g cottage cheese	250 ml milk 125 ml yoghurt 30–40 g mature cheese 80 g cottage cheese	250 ml milk 125 ml yoghurt 30–40 g mature cheese 80 g cottage cheese
Fish	3–4 portions/week	125–150 g	100–120 g	140–150 g
Lean meat	3–4 portions/week	100–125 g	80–100 g	120 g
Eggs	3–4 portions/week	100–125 g	60–120 g	60–120 g
Legumes	2–4 portions/week	60–80 g	60 g	80 g
Nuts	3–7 portions/week	20–30 g	20–30 g	20–30 g
Fattier and processed meat	Occasional and moderate	–	–	–
Sweets and snacks	Occasional and moderate	–	–	–
Butter and pastries	Occasional and moderate	–	–	–
Water	4–8 portions/d	200 ml approx.	250 ml approx.	250 ml approx.
Beer or wine	Optional and moderate	50–100 ml wine 100–200 ml beer	–	–
Physical activity	Daily	≥30 min	60 min	60 min

We calculated the average price of the seven cheapest products and next calculated the average price of all other products in the same food category available at the chosen retailer, except for the 10% most expensive products. Finally, we calculated the average price for the food category by weighting the average price of the seven cheapest products five times per week and the others two times per week.

Net amounts of fresh fruits, vegetables, potatoes, fish, fattier meat and eggs were increased with a waste percentage of 22, 28, 10, 30, 20 and 12%, respectively⁽³⁸⁾. This percentage was 30% in the case of fish and 20% for red meat. The waste fraction was not considered for lean meat, since it is very common in Spain to buy it ready to cook (no waste). When this is not the case (i.e. when buying an entire chicken), the price per kilogram is always cheaper but the actual amount of food that can be consumed is lower, so the final net price is more or less similar. Our calculations were made using ready-to-cook lean meat portion amounts and prices.

The residual category was filled with those products that are part of a balanced diet, but for which there are no recommendations. This category included cocoa powder, chocolate, jam, sugar, spices, salt, pepper, flour, sauces such as mayonnaise and ketchup, and vinegar, and its suitability was one of the main points of discussion of the focus groups.

The consumption of delicacies such as cakes, crisps, biscuits, takeaway meals or eating out is very widespread in Spanish society. However, evidence on their effect on health lays bare the need to reduce their intake because of their high content of sugar, salt and unhealthy fats^(1,2).

Based on this fact, and because the SHFB can have an educative function, these products were not included in the SHFB but have a place in other baskets of the RB such as ‘maintaining significant social relations’, ‘safety in childhood’ and ‘rest and leisure’. Alcohol for social consumption was considered within these other baskets, but we included in the SHFB the optional amount of wine and beer contemplated by the Spanish Agency for Food Safety and Nutrition (Agencia Española de Seguridad Alimentaria y Nutrición; AESAN)–SENC guidelines.

The kitchen equipment required to prepare, eat, store and conserve food was also included in this basket. In this case, we relied on a common list for all countries based on the Belgian experience⁽³⁹⁾. The kitchen equipment needed is quite universal in our European context, but we tested the adequacy of the equipment during the focus group discussions as explained below and some variations were introduced due to cultural habits.

In addition to a healthy diet, physical activity is essential for good health and to maintain energy balance. Daily activities for 30 min for adults and 60 min for children and teenagers are recommended in the SENC guidelines. Free and paid options to perform physical activity were also discussed within the focus groups.

Once the initial basket was developed, we priced the different items in the basket. As it is highly impractical to frequent different shops for regular purchases such as food, a choice was made by the different participant countries to consider that people make combined purchases from a single store. In the case of Spain, this choice was made upon a study of the Spanish Consumers’ Association (Organización de Consumidores y Usuarios;



OCU)⁽⁴⁰⁾ in which the prices from different retailers in Spain were analysed and compared in different ways: (i) the cost of a 'basic basket' (which included white-labelled products); (ii) the cost of a 'typical basket' (that compared products of exactly the same brand and package); and (iii) the cost of a 'fresh basket' (which included fresh vegetables and fruit). This comparison was made country-wide and also for the main cities in Spain. We selected a retailer widespread across different cities in Spain which had, for the three baskets considered in the OCU study, prices about 10% higher than the cheapest retailer, which gives a little margin for people to choose where to do their shopping while still buying at a low price. Besides, it is a retailer very conveniently accessible in almost every city in Spain, with a substantial number of points of sale normally placed inside the cities themselves; while other supermarkets with slightly lower prices are normally located in big shopping areas at the outskirts, not being easily reachable for all people, especially non-car owners. By considering the household type, while taking due account of the required quantity, quality and storage life, we were looking for the appropriate packaging at the lowest possible price. Prices vary widely across different areas of the country, so it is necessary to bring this phase of the research at the local level. As mentioned above, the reference city for the present study was Barcelona; thus the prices were collected in this location.

In the absence of studies comparing the prices of retailers of household items, the choice of the store in which to buy the kitchen equipment was made by the research team after comparing some of the most widespread chains. When possible, we relied on multinational brands, which could allow cross-country comparability. The actual pricing of the whole SHFB was done in July 2013 through the online shop platforms of the selected retailers.

The last step was to validate the acceptability and feasibility of the SHFB. We conducted three focus groups with the aim of gathering opinions and arguments about the composition of the basket and to check if some items were lacking or redundant. Each one of these focus groups lasted approximately 90 min during which the different baskets of the Spanish RB were discussed. The first one was developed in December 2013 and served as a test focus group, while the other two took place in March 2014.

We approached the respondents through public and private social organizations. Two units of public social services, one school and one non-governmental organization in Barcelona helped us to recruit between six and eight participants per group. Specifically, we were looking for adults matching the characteristics of our profile families: adults between 30 and 50 years old (male or female), with children between 8 and 16 years old in a single-parent or biparental family, employed or unemployed and with different income levels (low, medium and medium-high). In total we had twenty participants with an average age of 40 years and they had children aged 2–22 years. The majority of

participants were women born in Catalonia and the average maximum educational level reached was secondary non-compulsory education. The sample was quite balanced in terms of the working situation and levels of income (eleven people with low income, nine people with medium or medium-high income).

The focus groups were held in a room prepared for the occasion by the social organizations. The discussion was guided mainly by one moderator with the support of an assistant. All the information was recorded. All participants signed an agreement of participation in which we informed about the objectives of the research and guaranteed that personal characteristics and all opinions and arguments brought forward during the discussion would be treated confidentially and anonymously, and used only for the purposes of the present project.

As for the SHFB, the discussion was based on specific questions about unclear or controversial points of the initial basket. These points were related to the acceptability and feasibility of the whole SHFB, the residual food category within it (which includes items that are not specified within the Spanish FBDG such as flour, cocoa, coffee, spices, among others; but that are perceived as necessary because of their gastronomic and cultural function in our context), the kitchen equipment and the practice of physical activity. The participants were presented with a list of the food items and kitchen equipment, as well as an example of a weekly menu, consisting of five meals per day, designed on the basis of the foods and goods included in the SHFB. They were asked about whether those inventories were appropriate, acceptable and feasible for a reference family of four members (two adults, one primary-school boy and one secondary-school girl) and also about the assumption of cooking at home on a daily basis. The aim was not focusing on the individual preferences or particular situation of each participant, but to collect reasons and arguments in favour or against the inclusion of every item for an adequate social participation.

Results

The SHFB does not aim to prescribe what people should eat, but to estimate a minimum budget threshold below which healthy eating is not possible for well-described hypothetical types of families. Table 2 shows the daily amounts of foods foreseen for each household type. The necessary kitchen equipment to prepare, eat, store and conserve the various food ingredients is displayed in Table 3. According to the focus group participants we did not include egg cups, because their use is very rare in Spain. Likewise, the coffee maker was changed for the most conventional type in our context.

Paid physical activity options in Barcelona were quite expensive (73–78 €/month for the whole family or 41–45 €/month for adults)⁽⁴¹⁾. Thus, as proposed by the

Table 2 Daily amounts of food (ml or g) foreseen for each household type in the Spanish Healthy Food Basket

	Single woman	Single man	Couple	Single woman + boy 10 years	Single man + boy 10 years	Couple + boy 10 years + girl 14 years	Single woman + girl 14 years	Couple + girl 14 years	Single woman + boy 10 years	Couple + boy 10 years
Tap water	1500.00	1500.00	3000.00	3500.00	3500.00	7000.00	3500.00	5000.00	3500.00	5000.00
Wine	50.00	100.00	150.00	50.00	100.00	150.00	50.00	150.00	50.00	150.00
Beer	100.00	200.00	300.00	100.00	200.00	300.00	100.00	300.00	100.00	300.00
Liquid total	1650.00	1800.00	3450.00	3650.00	3800.00	7450.00	3650.00	5450.00	3650.00	5450.00
Bread, wholegrain	96.88	142.46	239.34	233.64	279.23	678.13	233.64	376.11	233.64	376.11
Toast/English bread	39.89	59.84	99.73	99.73	119.67	219.40	99.73	159.56	99.73	159.56
Breakfast cereals, not sweetened	0.00	0.00	0.00	29.92	29.92	59.84	29.92	29.92	29.92	29.92
Potatoes	71.23	94.98	166.21	166.21	189.95	356.16	166.21	261.19	166.21	261.19
Rice	38.47	51.29	89.75	89.75	102.58	192.33	89.75	141.04	89.75	141.04
Pasta	25.64	34.19	59.84	59.84	68.38	128.22	59.84	94.03	59.84	94.03
Legumes	12.82	17.10	29.92	25.64	29.92	55.56	25.64	42.74	25.64	42.74
Total bread, grains, legumes and potatoes	284.93	399.85	684.79	704.73	819.65	1524.38	704.73	1104.58	704.73	1104.58
Fresh vegetables	237.44	316.59	554.03	554.03	633.18	1187.21	554.03	870.62	554.03	870.62
Frozen unprepared vegetables	128.22	170.96	299.18	299.18	341.92	641.10	299.18	470.14	299.18	470.14
Total vegetables	365.66	487.55	853.21	853.21	975.10	1828.31	853.21	1340.76	853.21	1340.76
Fresh fruit	460.27	767.12	1227.40	1035.62	1342.47	2378.08	1035.62	1802.74	1035.62	1802.74
Total fruit	460.27	767.12	1227.40	1035.62	1342.47	2378.08	1035.62	1802.74	1035.62	1802.74
Milk, semi-skimmed	199.45	249.32	448.77	448.77	498.63	947.40	448.77	698.08	448.77	698.08
Yoghurt, skimmed	398.90	498.63	897.53	648.22	747.95	1396.16	648.22	1146.85	648.22	1146.85
Cheese, mature	11.40	17.10	28.49	22.79	28.49	51.29	22.79	39.89	22.79	39.89
Cheese, cottage	56.99	89.04	146.03	113.97	146.03	260.00	113.97	203.01	113.97	203.01
Total dairy	666.74	854.08	1520.82	1233.75	1421.10	2654.85	1233.75	2087.84	1233.75	2087.84
Charcuterie (lean)	14.25	28.49	42.74	42.74	56.99	99.73	42.74	71.23	42.74	71.23
Fish, fresh	25.44	30.53	55.97	49.86	54.95	110.92	55.97	86.50	49.86	80.39
Fish, frozen	35.62	42.74	78.36	69.81	76.93	155.29	78.36	121.10	69.81	112.55
Fish, canned	17.81	21.37	39.18	34.90	38.47	77.64	39.18	60.55	34.90	56.27
Meat, lean	42.74	53.42	96.16	85.48	96.16	190.19	94.03	147.45	85.48	138.90
Meat, fattier	17.81	22.26	40.07	35.62	40.07	75.68	35.62	57.88	35.62	57.88
Eggs	48.57	60.71	109.28	106.85	118.99	225.84	106.85	167.56	106.85	167.56
Total meat, fish and eggs	202.23	259.53	461.75	425.26	482.56	935.29	452.74	712.26	425.26	684.79
Olive oil	29.92	29.92	59.84	59.84	59.84	119.67	59.84	89.75	59.84	89.75
Sunflower oil	9.97	19.95	29.92	29.92	39.89	59.84	19.95	39.89	29.92	49.86
Nuts, with husk	19.95	19.95	39.89	39.89	39.89	79.78	39.89	59.84	39.89	59.84
Total fat	59.84	69.81	129.64	129.64	139.62	259.29	119.67	189.48	129.64	199.45
Coffee	19.95	19.95	39.89	19.95	19.95	39.89	19.95	39.89	19.95	39.89
Tea	9.97	9.97	19.95	9.97	9.97	19.95	9.97	19.95	9.97	19.95
Cocoa powder	0.00	0.00	0.00	17.10	17.10	34.19	17.10	17.10	17.10	17.10
Chocolate	9.97	9.97	19.95	29.92	29.92	59.84	29.92	39.89	29.92	39.89
Jam	19.95	19.95	39.89	39.89	39.89	79.78	39.89	59.84	39.89	59.84
Sugar, crystal	19.95	19.95	39.89	39.89	39.89	79.78	39.89	59.84	39.89	59.84
Spices: pepper	0.30	0.30	0.60	0.60	0.60	1.20	0.60	0.90	0.60	0.90
Spices: iodized salt	0.50	0.50	1.00	1.00	1.00	1.99	1.00	1.50	1.00	1.50
Spices: nutmeg	0.09	0.09	0.17	0.17	0.17	0.34	0.17	0.26	0.17	0.26
Spices: oregano	0.21	0.21	0.43	0.43	0.43	0.85	0.43	0.64	0.43	0.64



Table 2 Continued

	Single woman	Single man	Couple	Single woman + boy 10 years	Single man + boy 10 years	Couple + boy 10 years + girl 14 years	Single woman + girl 14 years	Couple + girl 14 years	Single woman + boy 10 years	Couple + boy 10 years
Spices: cinnamon	0.21	0.21	0.43	0.43	0.43	0.85	0.43	0.64	0.43	0.64
Flour	4.99	4.99	9.97	9.97	9.97	19.95	9.97	14.96	9.97	14.96
Cold sauces: mayonnaise	10.68	10.68	21.37	21.37	21.37	42.74	21.37	32.05	21.37	32.05
Cold sauces: ketchup	10.68	10.68	21.37	21.37	21.37	42.74	21.37	32.05	21.37	32.05
Vinegar	39.89	39.89	79.78	59.84	59.84	119.67	59.84	99.73	59.84	99.73
Total residual	147.34	147.34	294.68	271.88	271.88	543.76	271.88	419.22	271.88	419.22

focus groups, we did not include paid physical activities (like swimming pool or gym entrance fees) with the understanding that families and individuals can engage a number of free activities regularly, given the availability and favourable weather to develop them outdoors. Some examples of physical activity practices that could be easily introduced in the daily routine free of cost were:

‘... activities that could be an alternative to a paid gym would be walking, running, cycling, get off the bus one stop earlier, climbing steps ...’ (Participant in focus group #1, woman, middle class)

As stated above, the focus groups’ comments were addressed mainly to those elements without a strong scientific basis, such as the residual group of the SHFB, the consumption of alcoholic beverages or the foods addressed to fulfil social functions. With regard to the residual group, the above-mentioned list was considered appropriate and some of these items were seen as indispensable to have a decent living standard:

‘... when you feel that you cannot have coffee, cookies or a chocolate bar, because everyone likes sweet things, then something goes wrong. There is the signal that you are no longer living with dignity. Having something sweet at home for you or your children is not a luxury.’ (Participant in focus group #1, man, lower-middle class)

Having a drink at home or when eating out was clearly seen as part of the Spanish culture:

‘Yes, the majority of people do. Maybe it is not recommended [smiles], but it is like this. It is not necessary, but it is a social event. You usually take a drink when inviting someone at home or when going out.’ (Participant in focus group #3, woman, lower class)

Last, it is worthwhile to mention that significant modifications were not suggested by the focus groups, indicating the adequacy of the menus presented. The participants agreed in considering the pricing surprisingly affordable, considering the amount and quality of the food products included. The menus were judged as convenient to prepare and highly desirable to feed their families, as expressed in the following quote:

‘It is a very balanced diet, my kids do not eat so well and I spend more!’ (Participant in focus group #1, woman, middle class)

Figure 1 shows the monthly cost of the SHFB for the different types of households. We observed that the price of the SHFB ranges from 131.63 € in the case of a single woman to 573.80 € for a four-member family. The whole priced SHFB for a couple with two children can be observed in Table 4. The kitchen equipment should be added to this sum, which would increase the monthly

Table 3 Kitchen equipment foreseen for each household type in the Spanish Healthy Food Basket

Product	Brand name	Quality	Shop	Quantity	Price (€)	Life span (months)	Single adult (cost, €)	Couple (cost, €)	Single adult + 1 child (cost, €)	Couple + 1 child (cost, €)	Couple + 2 children (cost, €)
Table	Melltorp	Moisture- and scratch-resistant finish (125 × 75)	IKEA	1 × 4p	39.99	180	0.22	0.22	0.22	0.22	0
Table	Bjursta	Moisture- and scratch-resistant finish (175 × 75)	IKEA	1 × 6p	149.00	180	0	0	0	0	0.83
Tablecloth	Caja	Machine washable at 60°C	IKEA	1 × 4–6p	12.99	60	0.22	0.22	0.22	0.22	0.22
Chairs	Lvar	Moisture- and scratch-resistant finish	IKEA	1pp	19.99	120	0.67	1.33	1.33	1.33	0.27
Rack	Omar	Stainless steel, easy to assemble, 46 × 36 × 184 cm	IKEA	1pf	38.99	180	0.22	0.22	0.22	0.22	0.22
Cooking (gas butane)	Meireles	Meireles g 1530 dvw	Miro	1pf	238.00	120	1.98	1.98	1.98	1.98	1.98
Combi fridge/freezer	Candy	Candy cfm 2550 e	Miro	1pf	279.00	120	2.33	2.33	2.33	2.33	
Combi fridge/freezer	Zanussi	Zanussi zrb938nw2	Miro	1pf	432.00	120					3.60
Hand blender	Solac	Solac ba 5601 – 300 W	Miro	1pf	17.00	60	0.28	0.28	0.28	0.28	0.28
Garde	Koncis	Stainless steel	IKEA	1pf	2.99	60	0.05	0.05	0.05	0.05	0.05
Ladle, tongs, 2 skimmers, spatula	Gnarp	5 kitchen products	IKEA	1pf	3.95	180	0.02	0.02	0.02	0.02	0.02
Spoon to dish up	Dragon	Dishwasher safe	IKEA	6pf	4.50	180	0.03	0.03	0.03	0.03	0.03
Wooden spoon	Rort	Wood, soft for all pans	IKEA	1pf	1.49	24	0.06	0.06	0.06	0.06	0.06
Kitchen knife	Brabantia	Stainless	amazon.es	1pf	35.00	120	0.07	0.07	0.07	0.07	0.07
Carving knife	Brabantia	Stainless	amazon.es	1pf	8.99	120	0.07	0.07	0.07	0.07	0.07
Tomato knife	Brabantia	Stainless	amazon.es	2pf	9.99	60	0.17	0.17	0.17	0.17	0.17
Chopping board	Legitim	Polyethylene/set of 2	IKEA	1pf	2.99	60	0.05	0.05	0.05	0.05	0.05
Food peeler	Stäm	ANS plastic, stainless steel	IKEA	1pf	0.99	60	0.02	0.02	0.02	0.02	0.02
Grater or rasp	Idealisk	Stainless steel	IKEA	1pf	4.99	120	0.04	0.04	0.04	0.04	0.04
Multi-purpose scissors	Trojka	Polypropylene plastic, stainless steel	IKEA	1pf	2.99	60	0.05	0.05	0.05	0.05	0.05
Tin opener	Stäm	Stainless steel, plastic cover	IKEA	1pf	1.99	60	0.03	0.03	0.03	0.03	0.03
Bottle opener	Idealisk	Nickel-plated	IKEA	1pf	1.99	60	0.03	0.03	0.03	0.03	0.03
Serving bowl	Trygg	Glass	IKEA	1 × 2p	0.99	60	0.02	0.02	0.02	0.02	0.03
Oven dish	Mixtur	Glass	IKEA	1pf	4.99	120	0.04	0.04	0.04	0.04	0.04
Deep plate	Lugn	GRES – 14 cm	IKEA	1pp	0.69	120	0.01	0.01	0.01	0.01	0.02
Plate	Lugn	GRES – 23 cm	IKEA	1pp	0.69	120	0.01	0.01	0.01	0.01	0.02
Desert plate	Godta	Glass – 20 cm	IKEA	1pp	1.99	120	0.02	0.03	0.03	0.03	0.07
Glass	Pokal	Glass	IKEA	1pp	0.49	120	0.00	0.01	0.01	0.01	0.02
Cutlery	Fornfut	Cutlery, 24 pieces, stainless steel	IKEA	1pp	9.99	180	0.06	0.06	0.06	0.06	0.06
Coffee cup and saucer	Dinera	GRES – 6 units	IKEA	1pp	9.99	120	0.08	0.17	0.17	0.17	0.33
Jars for freezer	Pruta	Set of 17	IKEA	7pf	3.99	120	0.03	0.03	0.03	0.03	0.03
Plastic bags for freezer	Bosque verde	Freezer bags, 30 × 40, 30 units	Mercadona	5pf	0.93	12	0.03	0.03	0.03	0.03	0.03
Tinfoil	Bosque verde	Tinfoil, 60 m	Mercadona	1 × 2p	2.79	12	0.23	0.23	0.23	0.23	0.47
Cling film	Bosque verde	Plastic film, 75 m	Mercadona	1 × 2p	0.95	4	0.24	0.24	0.24	0.24	0.48
Jars	Reda	5 jars, plastic lid	IKEA	4pf	1.99	120	0.07	0.07	0.07	0.07	0.07
Detergent	Bosque verde	Concentrated soap, 1300 ml	Mercadona	1pf	1.85	3.5	0.53	0.53	0.53	0.53	0.21
Dishcloth	Bosque verde	Soft dishcloth, 200 × 40 cm	Mercadona	2pf	1.00	12	0.03	0.03	0.03	0.03	0.03
Tea towel	Elly	4 units	IKEA	2 × 1p	1.99	60	0.03	0.07	0.07	0.07	0.13
Dish sponge	Bosque verde	Dish sponge, pack 3 units	Mercadona	1pf	1.00	1	1.00	1.00	1.00	1.00	1.00
Bin	Strapats	Pedal bin, stainless	IKEA	1pf	14.99	180	0.08	0.08	0.08	0.08	0.08
Oven cloths	Iris	Cotton, polyester	IKEA	2pf	1.99	120	0.02	0.02	0.02	0.02	0.02
Pot stand	Heat	Cork, 3 units	IKEA	3pf	1.99	120	0.02	0.02	0.02	0.02	0.02
2 pots with lid + sauce pan + frying pan	Snitsig	1 litre/3 litres/5 litres/ 24 cm	IKEA	1pf	25.99	180	0.14	0.14	0.14	0.14	0.14
Frying pan	Skanka	14 cm	IKEA	1pf	3.99	60	0.07	0.07	0.07	0.07	0.07
Steam basket	Stabil	Stainless	IKEA	1pf	5.99	60	0.10	0.10	0.10	0.10	0.10

Table 3 Continued

Product	Brand name	Quality	Shop	Quantity	Price (€)	Life span (months)	Single adult (cost, €)	Couple (cost, €)	Single adult + 1 child (cost, €)	Couple + 1 child (cost, €)	Couple + 2 children (cost, €)
Colander	Fläckig	Plastic	IKEA	1pf	0.99	60	0.02	0.02	0.02	0.02	0.02
Measuring jug	Fläckig	Plastic	IKEA	1pf	1.50	120	0.01	0.01	0.01	0.01	0.01
Jug	Vänlig	Glass	IKEA	1pf	2.99	60	0.05	0.05	0.05	0.05	0.05
Coffee maker	Radig	6 cups, stainless steel	IKEA	1pf	19.99	120	0.17	0.17	0.17	0.17	0.17
Thermos jug	Silka	Shatterproof glass	IKEA	1pf	19.99	120	0.17	0.33	0.33	0.33	0.67
Cooker hood filter	Carbon filter	Nyttig fil 900	IKEA	1pf	10.00	12	0.83	0.83	0.83	0.83	0.83
Microwave oven	Beko	Classic 800 W	Miro	1pf	42.97	96	0.45	0.45	0.45	0.45	0.45
						TOTAL	11.18	12.15	12.15	12.15	13.78

1 × 4p. one for four people; 1 × 6p. one for six people; 1 × 4–6p. one for four to six people; 1pp. one per person; pf, per family unit (e.g. 1pf = one per family unit); 1 × 2p. one for two people; 2 × 1p. two for one person.

price by between 11.18 € and 13.78 € depending on the type of household. The highest cost comes generally from protein-based foods such as meat, fish or eggs, followed by fruit and vegetables. Only in the case of a single woman is the cost of fruit the highest within the basket.

Discussion

In the previous sections we have described the process of development and the content of the Spanish RB for healthy food, following the ImPRovE methodology. As in other RB studies, our approach starts from a normative perspective using guidelines and expert opinion to determine the elements required to respond to social participation needs. We also designed the focus groups to check the acceptability and feasibility of the content. Thus we are not trying to be prescriptive of what people should or should not do or have; but to illustrate the necessary resources needed to fulfil a minimal social participation^(28,32,42,43).

The SHFB also represents the economic amount that allows maintenance of a healthy diet without significant constraints. In the framework of the ImPRovE research, it is possible to observe that differences between countries in terms of composition and cost of the basket stem from variations in the FBDG, cultural habits and prices⁽³²⁾.

The cost of the SHFB differs from the expenses that can be observed in consumption surveys. According to the Spanish Household Budget Data, the average expenditure on food by Spanish households is 341.5 €/month⁽⁴³⁾. Data from the Spanish Panel of Food Consumption situates the average monthly expenditure per person at 127 €, where meat and fish, along with fruits and vegetables hold the biggest part of the budget⁽⁴⁵⁾. This estimated cost is aligned with the cost of the SHFB for a single woman and also for children; whereas the expenditure for a single man would be higher.

It should be stressed that average monthly expense per person varies depending on the composition of the household and SES. For example, single adults and couples without children have a higher per capita food consumption with regard to the national average (54% and 32% of the deviation, respectively), whereas single parents and families with young children tend to show lower per capita food consumption (–15.3% and –30.9% of the deviation, respectively). When looking at the variation by SES, it can be observed that families in the lower quartile have a lower per capita food consumption (–7.4%); while those classified as medium–high or high SES present a per capita food consumption 13.6% higher. Not only is the outlay lower among families from low SES, but changes in the types of products consumed can also be observed⁽¹¹⁾. In any case, consumption surveys do not always reflect the real household costs on a specific category, which is, in fact, one of the reasons why RB have been posited to be a better tool to estimate consumption,

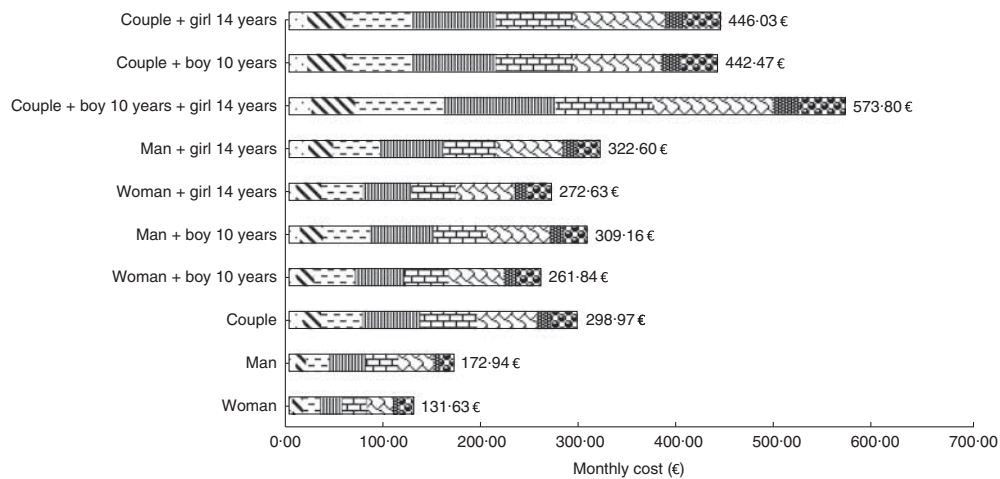


Fig. 1 Monthly cost of the Spanish Healthy Food Basket for the different family types (☐, fluids; ☐, cereals, bread, pulses, potato; ☐, vegetables; ☐, fruit; ☐, dairy; ☐, meat, fish, eggs; ☐, fats; ☐, residual)

since they are based on more specific individual or household needs.

In this context, the SHFB can have two main practical applications: on the one hand, it can serve to inform policies designed to guarantee food access about the minimum needed to sustain healthy eating for different types of family, and, on the other, it can be used as an educative tool to promote healthy eating.

With regard to the first function, in spite of the fact that the Spanish Government has endorsed and signed several international treaties that recognize the right to proper nutrition, the lack of a clear policy to ensure (proper) nutrition is a first drawback in this direction^(11,20). Future regulations, such as minimum income protection schemes, should take into account that what needs to be guaranteed is not only enough energy to survive but also proper nutrition to promote health. Otherwise, these policies will create more health inequalities in the short and long term. For example, in Catalonia (the administrative region where Barcelona is located) the minimum income allowance for a single person is 423.70 €, whereas for an adult with two children this amount increases only up to 534.28 €⁽⁴⁶⁾. It is clearly difficult to sustain a healthy diet for three people with this allowance, taking due account that there are other expenses to be covered.

Concerning the educative function, the use of the food RB as a basis for nutritional education overcomes certain limitations of good initiatives that have been promoted from Spanish organizations concerned about the rise of food insecurity^(47–50). RB provide a practical approach to address budgetary and cooking skills limitations, which are major drawbacks against the adoption of healthy eating habits, especially among low SES families^(9,21). An excellent example is the case of Belgium, where the RB have even resulted in the creation of two recipe books for economical and healthy meals^(51,52).

Certainly, ensuring an adequate diet for everyone cannot only be achieved by teaching people to cook and eat

healthily in an economical way. Indeed, it should not replace upstream improvement of the ultimate causes of unequal access to proper nutrition. Tackling social determinants such as income inequality, promoting better educational achievement and fostering social cohesion should be at the base of any action aimed at promoting healthier generations.

The process of building RB is not exempt of limitations. As previously explained, there are a number of unavoidable arbitrary choices that will condition the final RB. For example, we have not included promotions and discounts, the possibility of receiving food from friends and family, or home economies because they are not necessarily reachable by everyone. Moreover, the aim of making the RB comparable cross-nationally necessarily brings tension among the cultural and the comparability needs. It is to alleviate arbitrary choices as much as possible that a mindful and robust method has been followed and these decisions have been transparently documented throughout the process. In this way, the reader becomes fully aware of the conditions under which these RB have been developed.

Additionally, the RB have been developed for a limited number of families only and cannot be extrapolated to the entire population⁽³⁴⁾. In this sense, future areas of research concerning the SHFB are related to taking into account a greater variation of reference situations. This comprises including other age profiles such as toddlers and elders, or different health conditions of the target population. Furthermore, if RB are to be used for policy making at a national level, a further effort to consider differences between Spanish regions and environments (rural–urban areas), in terms of cultural habits and the cost of living, should be made.

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Table 4 Priced food basket for a couple with two children (boy 10 years, girl 14 years)

Food product	Amount for couple + 2 children	Quality	Product	Brand	Package capacity	g/ml	Price/package (€)	Price/month (€)
Water	7000.00		Agua Mineral Natural. Garrafa 8 litres	Font Agudes	8000	ml	0.76	17.32
Wine	150.00	Red	Vino Tinto. Brick 1 litres	C. Historico	1000	ml	0.82	3.76
Beer	300.00		Cerveza Rubia. Lata Pack	Steinburg	3960	ml	2.88	6.64
Bread, wholegrain	512.87	Wholegrain	Pan Barra Integral. Paquete 3 units – 750 g	Mercadona	2250	g	1.15	8.02
Cereals, not sweetened	59.84	Part wholegrain	Cereal Copos Arroz Trigo Integral. 500 g	Harrisons	500		1.70	6.23
Toast	219.40	Wholegrain	Pan Molde Integral 16 Rebanadas. 460 g	Hacendado	460	g	0.65	9.43
Potatoes	356.16	New season	Patata Nueva. Malla 5 kg	Mercadona	5000	g	5.35	11.59
Rice	192.33	White, round	Arroz Redondo. Paquete 1 kg	Hacendado	1000	g	0.68	4.02
Pasta	128.22	Macaroni	Macarron Pasta. Paquete 1 kg	Hacendado	1000	g	0.79	3.09
Legumes	55.56	Boiled pulses	Tarro 570 g. Ecurrido 400 g	Hacendado	400	g	0.51	2.17
Fresh vegetables	1187.21		Diverse		1000	g	1.56	56.47
Frozen vegetables	641.10		Diverse		1000	g	1.70	33.25
Fresh fruit	2378.08		Diverse		1000	g	1.59	115.15
Milk, semi-skimmed	947.40		Leche Semidesnatada. Brick Pack 6 x 1 litre	Hacendado	6000	ml	3.24	15.57
Yoghurt, skimmed	1396.16	Natural	Yogur Desnatado Natural. Pack 6 x 125 g	Hacendado	750	ml	0.78	44.17
Cheese, mature	51.29		Queso Semicurado Mezcla Mini. Pieza G	Entrepinares	1000	g	7.20	11.40
Cheese, cottage	260.00		Queso Fresco Burgos. Pack 2 x 250 g	Hacendado	500	g	1.75	27.71
Charcuterie (lean)	99.73		Diverse		1000	g	6.78	20.91
Fish fresh	110.92		Diverse		1000	g	3.80	12.98
Fish, frozen	155.29		Diverse		1000	g	5.16	24.52
Fish, canned	77.64		Diverse		1000	g	7.08	17.12
Meat, lean	190.19		Diverse		1000	g	3.81	22.20
Meat, fattier	75.68		Diverse		1000	g	4.79	11.17
Eggs	225.84	Large size	Huevo Mediano L. Carton 12 units		730.56	g	1.49	14.02
Olive oil	119.67	Extra virgin	Aceite Oliva Virgen Extra Tapon Verde. 1 litre	Fontoliva	1000	ml	2.99	10.96
Sunflower oil	59.84		Aceite Girasol Tapon Amarillo. 5 litres	Hacendado	5000	ml	5.95	2.48
Nuts, with husk	79.78	With husk	Nuez Con Cascara. Paquete 600 g	Hacendado	600	g	3.50	14.29
Coffee	39.89		Cafe Molido Natural N° 1. Paquete 500 g	Hacendado	500	g	2.30	5.75
Tea	19.95		Infusion Te. Caja 25 Bolsita – 43.7 g	Hacendado	43.7	g	0.49	6.80
Cocoa powder	34.19		Cacao Soluble Instantaneo. Bolsa 1 kg	Hacendado	1000	g	3.10	3.36
Chocolate	59.84		Chocolate Leche Almendras. 2 units x 150 g	Hacendado	300	g	1.82	11.07
Jam	79.78		Mermelada Fresa. Tarro 440 g	Hacendado	440	g	0.99	5.53
Sugar, crystal	79.78		Azucar Blanquilla. Paquete 1 kg	Acor	1000	g	0.93	2.33
Spices: pepper	1.20	Black, ground	Pimienta Negra Molida. Tarro 70 g	Hacendado	70	g	0.70	0.41
Spices: iodized salt	1.99	Iodized	Sal Fina Seca Yodada. Paquete 1 kg	Marismeña	1000	g	0.23	0.02
Spices: nutmeg	0.34		Nuez Moscada Molida. Tarro 58 g	Hacendado	58	g	1.00	0.25
Spices: oregano	0.85		Oregano. Tarro 18 g	Hacendado	18	g	0.52	0.78
Spices: cinnamon	0.85		Canela. Tarro 18 g	Hacendado	18	g	0.65	0.98
Flour	19.95		Harina Trigo. Paquete 1 kg	Aragonesa	1000	g	0.45	0.30
Mayonnaise	42.74		Mayonesa. Bote 560 g	Hacendado	560	ml	2.50	5.83
Ketchup	42.74		Ketchup. Bote 600 g	Hacendado	600	ml	0.90	1.95
Vinegar	119.67	White wine	Vinagre Vino Blanco. Botella 1 litre	Hacendado	1000	g	0.49	1.80
							TOTAL	573.80



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References

- World Health Organization (2002) *The World Health Report 2002–Reducing Risks, Promoting Healthy Life*. Geneva: WHO.
- World Health Organization (2004) *Global Strategy on Diet, Physical Activity and Health*. Geneva: WHO.
- European Food Information Council (2005) The Determinants of Food Choice. <http://www.eufic.org/article/en/expid/review-food-choice/> (accessed March 2015).
- De Irala-Estévez J, Groth M, Johansson L *et al.* (2000) A systematic review of socio-economic differences in food habits in Europe: consumption of fruit and vegetables. *Eur J Clin Nutr* **54**, 706–714.
- Roos G, Johansson L, Kasmel A *et al.* (2001) Disparities in vegetable and fruit consumption: European cases from the north to the south. *Public Health Nutr* **4**, 35–43.
- Konttinen H, Sarlio-Lähteenkorva S, Silventoinen K *et al.* (2013) Socio-economic disparities in the consumption of vegetables, fruit and energy-dense foods: the role of motive priorities. *Public Health Nutr* **16**, 873–882.
- Antentas JM & Vivas E (2014) Impacto de la crisis en el derecho a una alimentación sana y saludable. Informe SESPAS 2014. *Gac Sanit* **28**, Suppl. 1, 58–61.
- De Pee S, Brinkman HJ, Webb P *et al.* (2010) How to ensure nutrition security in the global economic crisis to protect and enhance development of young children and our common future. *J Nutr* **140**, issue 1, 138S–142S.
- Darmon N & Drewnowski A (2008) Does social class predict diet quality? *Am J Clin Nutr* **87**, 1107–1117.
- Nikolić M, Glibetić M, Gurinović M *et al.* (2014) Identifying critical nutrient intake in groups at risk of poverty in Europe: the CHANCE project approach. *Nutrients* **6**, 1374–1393.
- Fundación Española de Nutrición (2013) *Libro Blanco de la Nutrición en España*. Madrid: Lesinguer, SL.
- Food and Agriculture Organization of the United Nations (1996) World Food Summit – Rome Declaration on World Food Security. <http://www.fao.org/docrep/003/w3613e/w3613e00.HTM> (accessed March 2015).
- Lee JS, Fischer JG & Johnson MA (2010) Food insecurity, food and nutrition programs, and aging: experiences from Georgia. *J Nutr Elder* **29**, 116–149.
- Observatori de la Vulnerabilitat de la Creu Roja a Catalunya (2015) *L'accés de la infància a l'alimentació saludable – 8è estudi*. Barcelona: Creu Roja; available at http://issuu.com/creurojacat/docs/observatori_8e_final/1
- Nelson M, Dick K & Holmes B (2002) Food budget standards and dietary adequacy in low-income families. *Proc Nutr Soc* **61**, 567–577.
- Brinkman HJ, De Pee S, Sanogo I *et al.* (2010) High food prices and the global financial crisis have reduced access to nutritious food and worsened nutritional status and health. *J Nutr* **140**, issue 1, 153S–161S.
- González Parada JR (director) (2014) *Emergència alimentària. Grècia, Portugal, Espanya*. Barcelona: Icaria.
- González-Bueno G, Bello A & Arias M (2012) *La infancia en España 2012–2013. El impacto de la crisis en los niños*. Madrid: Unicef España; available at https://www.unicef.es/sites/www.unicef.es/files/Infancia_2012_2013_final.pdf
- Síndic de Greuges de Catalunya (2013) *Informe sobre la malnutrició infantil a Catalunya*. Barcelona: Síndic de Greuges de Catalunya; available at <http://www.sindic.cat/site/unitFiles/3506/Informe%20malnutricio%20infantil%20catala.pdf>
- Fargas L, Guillamón À, Garriga N *et al.* (2014) Informe sobre el dret a l'alimentació a Catalunya. Impactes de la pobresa alimentària a Ciutat Vella i Nou Barris. http://observatoridesc.org/sites/default/files/cat_informe-alimentacio_0.pdf (accessed March 2015).
- Lang T (2005) Food control or food democracy? Re-engaging nutrition with society and the environment. *Public Health Nutr* **8**, 730–737.
- Bradshaw J, Mitchell D & Morgan J (1987) Evaluating adequacy: the potential of budget standards. *J Soc Policy* **16**, 165–181.
- Fisher GM (2007) An overview of recent work on standard budgets in the United States and other Anglophone countries. <http://aspe.hhs.gov/poverty/papers/std-budgets/report.pdf> (accessed February 2015).
- Rowntree BS (editor) (2000) *Poverty: A Study of Town Life*, centennial ed. Bristol: The Policy Press.
- Bradshaw J (2000) Preface. In *Poverty: A Study of Town Life, centennial ed.*, pp. xix–xxxii [BS Rowntree, editor]. Bristol: The Policy Press.
- Orshansky M (1965) Counting the Poor: Another look to at the Poverty Profile. <http://www.ssa.gov/policy/docs/ssb/v28n1/v28n1p3.pdf> (accessed February 2015).
- Storms B, Goedeme T, Van den Bosch K *et al.* (2014) Pilot project for a development of a common methodology on reference budgets in Europe. Review of current state of play on reference budget practices at national, regional and local level. <http://www.referencebudgets.eu/> (accessed March 2015).
- Saunders P (1999) Budget standards and the poverty line. *Aust Econ Rev* **31**, 43–61.
- Borgeraas E & Dahl E (2010) Low income and 'poverty lines' in Norway: a comparison of three concepts. *Int J Soc Welf* **19**, 73–83.
- Vranken J (2010) *Using Reference Budgets for Drawing up the Requirements of a Minimum Income Scheme and*



- Assessing Adequacy. Synthesis Report.* Brussels: European Commission Employment, Social Affairs and Inclusion.
31. European Commission (2013) Social investment: Commission urges Member States to focus on growth and social cohesion – frequently asked questions. *MEMO 13/117, 20th February 2013.* Brussels: European Commission; available at http://europa.eu/rapid/press-release_MEMO-13-117_en.htm
 32. Goedemé T, Storms B, Stockman S *et al.* (2015) Towards cross-country comparable reference budgets in Europe: first results of a concerted effort. *Eur J Soc Sec* **17**, 3–31.
 33. ImPRovE Consortium (2012) ImPRovE project: poverty, social policy and innovation. <http://improve-research.eu/> (accessed October 2015).
 34. Storms B, Goedemé T, Van den Bosch K *et al.* (2013) *Towards A Common Framework for Developing Cross-Nationally Comparable Reference Budgets in Europe. ImPRovE Methodological Paper* no. 13/02. Antwerp: ImPRovE Consortium; available at <http://improve-research.eu/?wpdmact=process&did=MTguaG90bGluaw==>
 35. Doyle L & Gough I (1984) A theory of human needs. *Crit Soc Policy* **10**, 6–38.
 36. Sociedad Española de Nutrición Comunitaria (2004) Guía de la alimentación saludable. https://www.semfyec.es/pfw_files/cma/Informacion/modulo/documentos/guia_alimentacion.pdf (accessed April 2016).
 37. Perez-Rodrigo C, Calderon V, Campos Amado J *et al.* (2013) Perseo project: process evaluation, level of implementation and effectiveness. *Ann Nutr Metab* **63**, 1115.
 38. Hoge Gezondheidsraad (2005) *Maten en gewichten: handleiding voor een gestandaardiseerde kwantificering van voedingsmiddelen (Measures and Weights: Manual for Standardized Quantification of Foods)*. Brussels: Hoge Gezondheidsraad.
 39. Storms B (2012) Referentiebudgetten voor maatschappelijke participatie. PhD Thesis, University of Antwerp.
 40. Organización de Consumidores y Usuarios (2012) Supermercados. Descubra el más barato de su barrio. *Compra Maest* **374**, 12–22.
 41. Ajuntament de Barcelona (2013) Equipaments esportius municipals. <http://esports.bcn.cat/ca/equipaments-municipals> (accessed March 2015).
 42. Bradshaw J, Middleton S, Davis A *et al.* (2008) *A Minimum Income Standard for Britain; What People Think*. York: Joseph Rowntree Foundation – Loughborough University.
 43. Storms B & Van den Bosch K (2009) *What Income do Families Need for Social Participation at the Minimum? A Budget Standard for Flanders*. Antwerp: Centrum Voor Sociaal Beleid Herman Deleeck, Universiteit Antwerpen-Stadscampus.
 44. Instituto Nacional de Estadística (2014) Encuesta de Presupuestos Familiares. Año 2013. Nota de prensa, 16 de junio de 2014. <http://www.ine.es/prensa/np848.pdf> (accessed April 2016).
 45. Mercasa (2014) *Alimentación en España. Producción, Industria, Distribución y Consumo*, 17th ed., 2014/2015. Madrid: Mercasa.
 46. Red Europea de Lucha contra la Pobreza (2014) *Informe sobre los Sistemas de Rentas Mínimas en España*. Brussels: European Commission.
 47. Ajuntament de Barcelona (2013) *Receptes d'aprofitament. El menjar no es llença: aprèn a aprofitar els aliments, elaborant receptes originals, de qualitat i econòmiques*. Barcelona: Ajuntament de Barcelona; available at http://w110.bcn.cat/Mercats/Continguts/Documents/Fitxers/Llibre_ReceptesAprofitament.pdf.pdf
 48. Generalitat de Catalunya (2013) *MenjarSa amb menys diners. 10 consells per treure més profit dels seus euros*. Barcelona: Generalitat de Catalunya; available at <http://www.cbprat.cat/saludable/menjar-sa-amb-menys-diners.pdf>
 49. Salvador-Castell G & Manera-Bassols M (2012) *L'alimentació saludable en l'etapa escolar*. Barcelona: Agència de Salut Pública de Catalunya, Departament de Salut; available at http://canalsalut.gencat.cat/web/.content/home_canal_salut/professionals/temes_de_salut/salut_alimentaria/documents/arxius/gualimentacio.pdf
 50. Creu Roja (2015) *Para comer bien, bueno y barato*. Barcelona: Creu Roja.
 51. Cornellis I & Vandervoort B (2011) *LEKKER & GEZOND, meer smaak met minder centen*. Gent: Borgerhoff & Lamberigst.
 52. Cornellis I & Vandervoort B (2013) *Een bele dag lekker en gezond eten voor 5 euros*. Gent: Borgerhoff & Lamberigst.