



# Cultural and Historical Perspectives on Body Image, Obesity, and Eating Disorders

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Navigating Obesity and Eating Disorders (EDs) in Young People  
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## 4. Local Report - Portugal

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**Abstract.** *Obesity represents one of the main public health problems worldwide. In Portugal, more than half of the adult population has overweight and obesity reached 1,5 million people aged more than 18 years-old. At the heart of these numbers is an unbalanced lifestyle: inadequate eating habits and physical inactivity. When analyzing childhood obesity, all Portuguese regions showed a decrease in the prevalence of overweight (including obesity), although it's still an alarming situation. It's believed that underlining this positive trend is the increase in food policy and outstanding national programs in recent years. Portugal presents its own food guide: Portuguese Food Wheel and guidelines aimed at improving the nutritional status of the population. In addition to public policies, such as campaigns, label decoder and food product reformulation, there are regional and local initiatives, to promote healthy eating habits and an active lifestyle.*

### 4.1 Introduction

Global obesity levels have been increasing over the past 4 decades, representing one of the main public health problems worldwide. The disease is related to increased morbidity, mortality, and related costs. In WHO Europe Region one in three school-aged children, one in four adolescents and almost 60% of adult population are facing the challenge of obesity.[1] Weight stigma that people living with obesity face also increases the risk for eating disorders whose real dimension is not so well characterized as obesity. Realities may be diverse between member states. In these chapters we present prevalence data of obesity and eating disorders in Portugal, along with national guidelines to promote healthy eating, some regional and local initiatives to facilitate and incentive healthy eating, and also an initiative related to the adoption of an active lifestyle to prevent obesity.

### 4.2 Prevalence of obesity and eating disorders in Portugal

#### Prevalence of adult obesity in Portugal

Obesity and overweight are assessed using the body mass index (BMI), calculated from the ratio between weight and length ( $\text{kg}/\text{m}^2$ ). Having individual obesity when the BMI is greater than 30  $\text{kg}/\text{m}^2$ , and overweight when BMI is greater than 25  $\text{kg}/\text{m}^2$  according to the cutoff points defined by the World Health Organization. [2]

In Portugal, according to the National Health Survey, in 2019 more than half of the adult population (53,6%) is overweight. [3] Obesity, that is, a BMI above 30 kg/m<sup>2</sup> reached 1,5 million people aged more than 18 years old (16,9%) with women being more affected than men (17,4% vs. 16,4%). The population aged 55 to 74 years old is the most affected, with values above 20%. Comparing the values of the 2019 survey with those of 2014, there is a slight increase in overweight (36.6% vs. 36.4%) and obesity (16.9% vs. 16.4 %). (Fig. 1) [3]

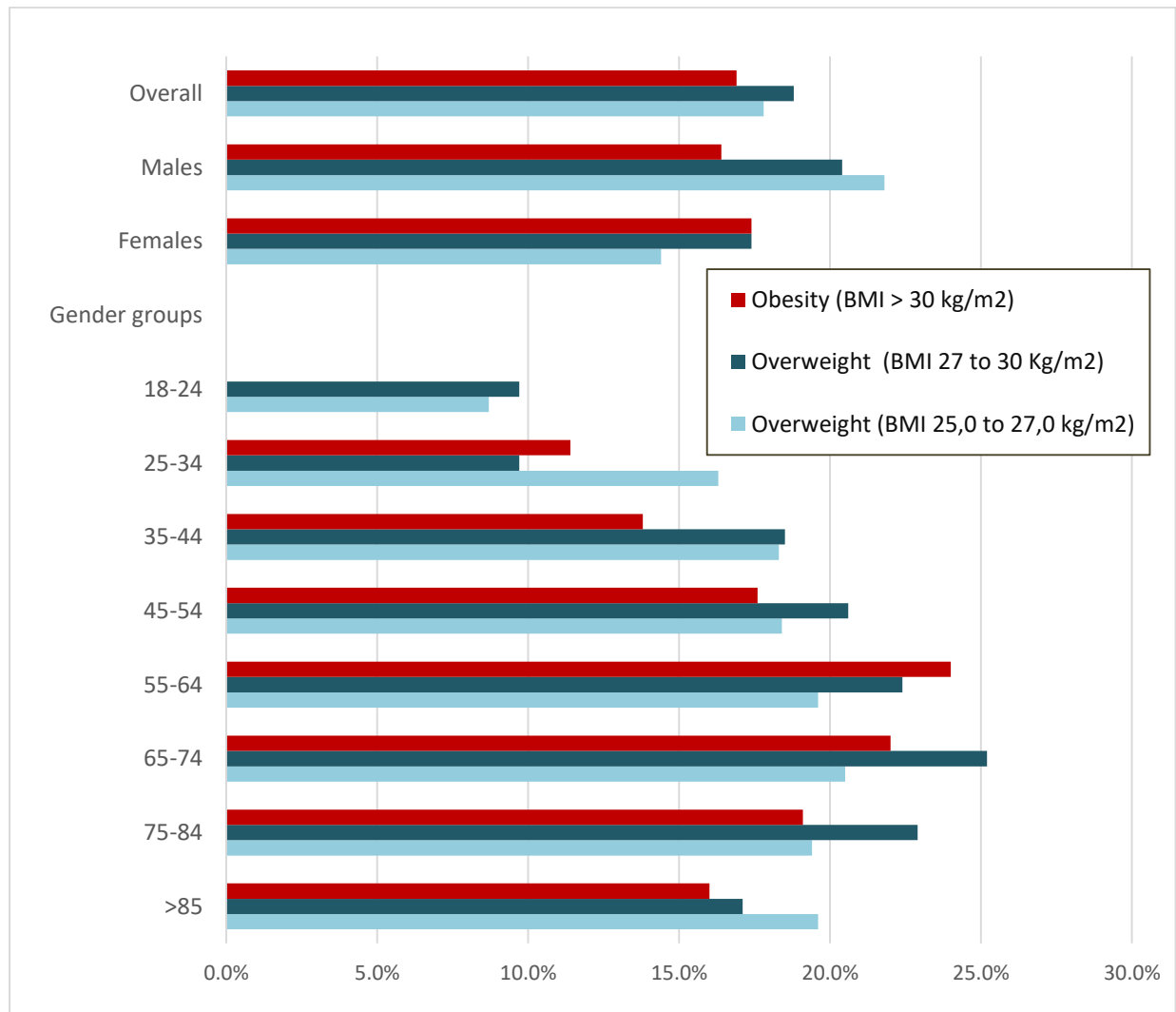


Fig. 1 Proportion of population aged 18-year-old or more, with overweight or obese by gender and age group, Portugal. Adapted from: <https://www.ine.pt/>

In another study, the National Food and Physical Activity Survey (“Inquérito Alimentar Nacional e de Atividade Física -IAN-AF”) for 2015-2016, 57.1% of the population was overweight for their height: 22.3% of the population was obese and 34.8% was overweight. (Fig. 2) [4]

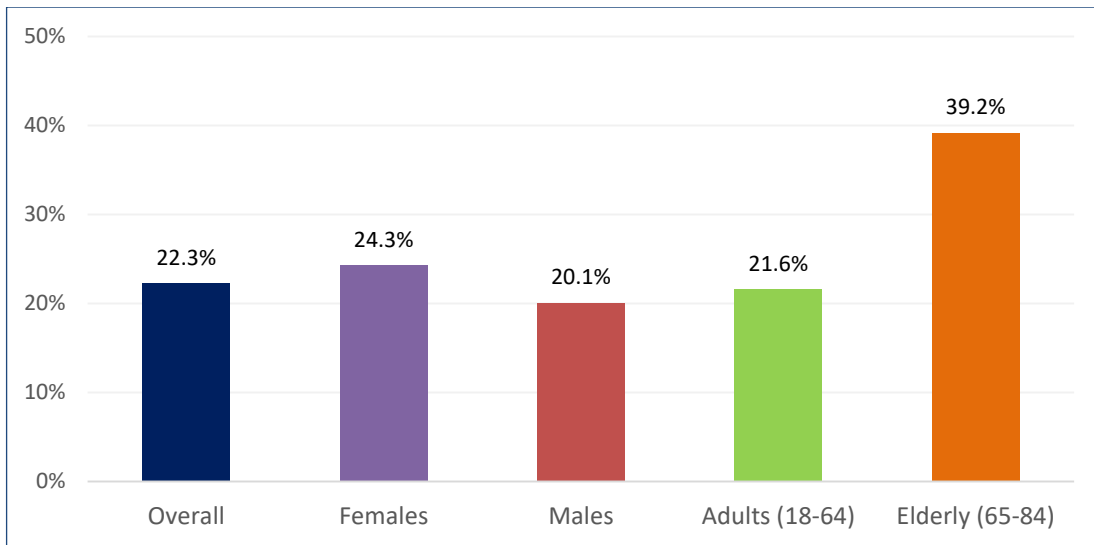


Fig. 2 Prevalence of obesity, by gender and age group, Portugal. Adapted from: <https://ian-af.up.pt/>

In addition to being classified according to overweight, obesity also varies according to the location and distribution of fat throughout the body. Abdominal obesity, that is, the increase in adipose tissue in the abdominal region, presents an increased risk for developing cardiovascular diseases, diabetes, dyslipidemia, and metabolic syndrome. [5] Abdominal obesity can be classified by the waist and hip circumference, according to the cutoff points recommended by the World Health Organization (Waist circumference:  $\geq 88$  cm in women and  $>102$  cm in men; waist-hip circumference:  $\geq 0,85$  in women and  $\geq 0,90$  in men).[6]

In Portugal, the prevalence of abdominal obesity is 50.5% in the adult population, being higher in males compared to females (62.0% vs. 39.2%) and much higher in the elderly (80.2%). (Fig. 3) Standardized prevalence for sex and age is higher in the Autonomous Region of Azores (61.7%) and the Center region (59.8%) and lower in the Lisbon metropolitan area (45.5%) and the North (47.9%). The prevalence of obesity, pre-obesity, and abdominal obesity are always higher in less educated individuals, although in the elderly the disparities by the level of education are lower. [4]

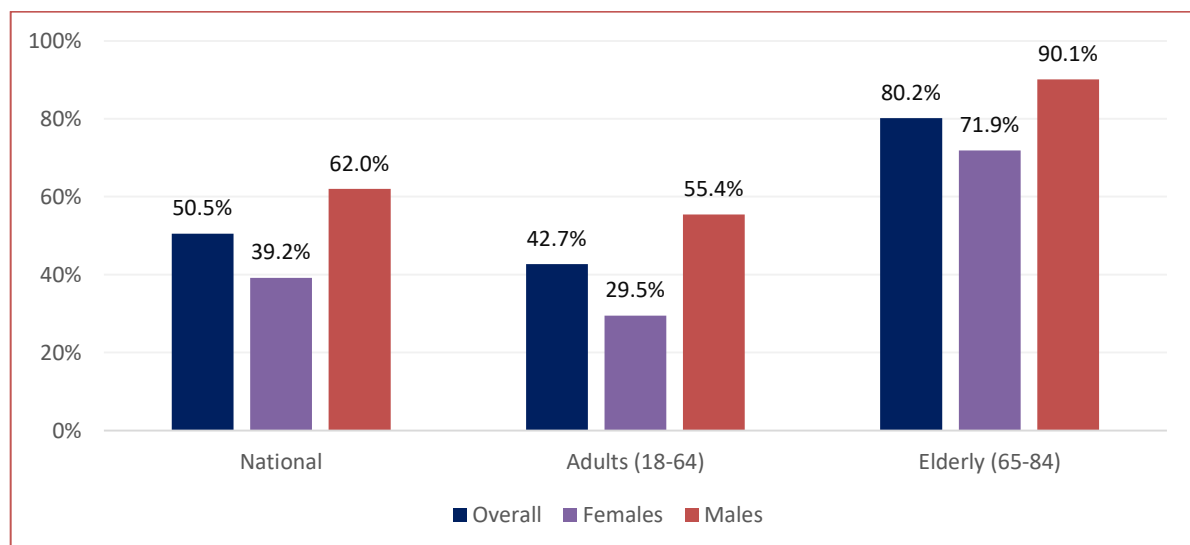


Fig. 3 Prevalence of very increased risk of abdominal obesity (waist-hip circumference ratio), national and by age group, Portugal. Adapted from: <https://ian-af.up.pt/>

At the heart of these numbers is an unbalanced lifestyle. According to the IAN-AF 2015-2016, only 18,0% of the adult Portuguese population has high adherence to the Mediterranean dietary pattern. More than half of the Portuguese population (56%) doesn't comply with the World Health Organization recommendation to consume more than 400g/day of fruit and vegetables. Around 24% of the population ingests fat above the recommended and 53% have a higher than recommended intake of saturated fatty acids. Regarding sugar consumption, 24,4% of the Portuguese consumers get their intake from sweets, soft drinks, natural or concentrated fruit juices, cakes, cookies, biscuits, and cereals breakfast, which contributes to more than 10% of the total energy value. The average sodium intake is 7,4 of salt, a value that exceeds the recommendation of 5g/day. [4]

Regarding physical activity, 43% of Portuguese were considered "sedentary", 30% at the "moderately active" and 27% at the "active" level, based on the International Physical Activity Questionnaire (IPAQ), (7) which considers all domains of daily life and three types of activities – light, moderate and vigorous. (Fig. 4) [4]

Physical activity and diet in combination with behavioral support and treatment of comorbidities are recognized as an integral part of the management of people who has overweight or obesity. [8] Considering the alarming situation in adults, it's important to consider and tackle obesity from childhood, which has happening also in Portugal in the last years.

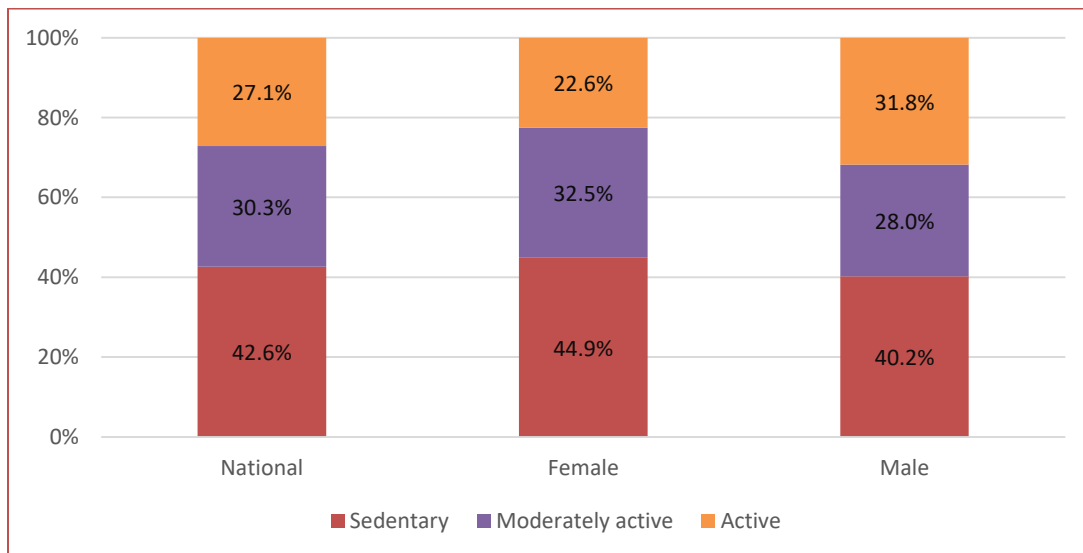


Fig. 4 Prevalence of physical activity levels by gender, Portugal. Adapted from: <https://ian-af.up.pt/>

### Prevalence of childhood obesity in Portugal

The WHO's European Childhood Obesity Surveillance Initiative (or COSI) has measured trends in overweight and obesity among primary school-age children (6 to 8 years) for over 10 years. It was a collaborative effort between WHO and research institutions from many European countries to collect high quality data on the prevalence of childhood overweight and obesity. [9]

In the most recent COSI Portugal report (2019), 11.9% of children aged 6-8 years has obesity and 29.7% has overweight. (Fig. 5) Although it is still an alarming situation that 1 in 3 children is overweight or obese, the data show a reduction of percentage points in the prevalence of overweight children since 2008, where Portugal was the second European country with the highest prevalence of children with obesity or overweight. [9]

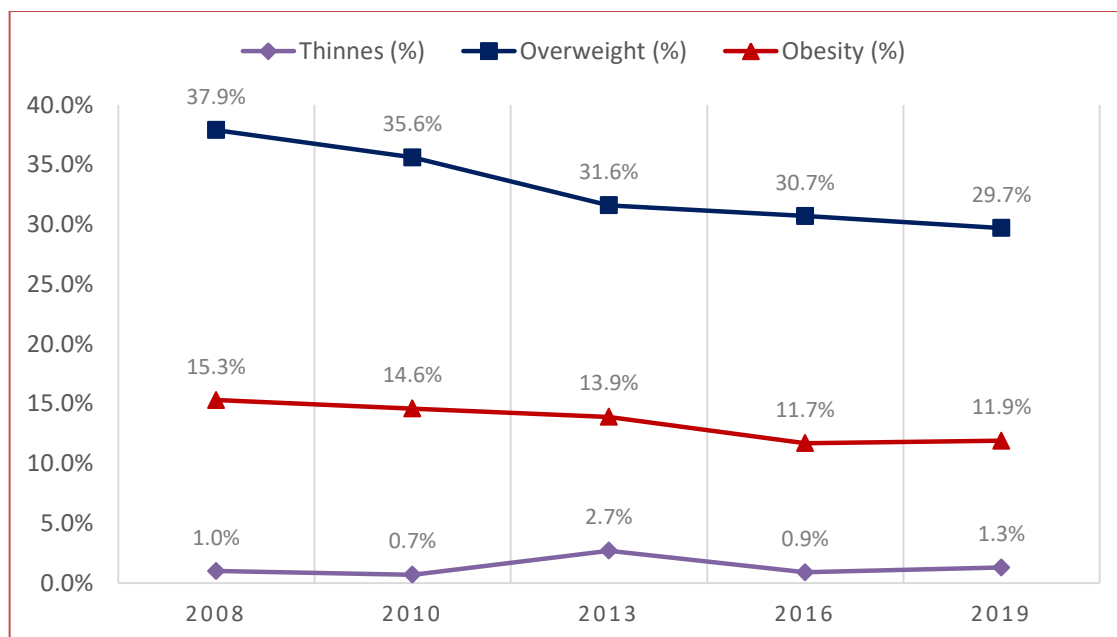


Fig. 5 Prevalence of childhood (6-8 years old) thinness, overweight (including obesity), and obesity in the different phases of COSI Portugal (2008 to 2016). Adapted from: <https://www.ceidss.com/wp-content/uploads/2020/03/COSI-2019-FactSheet.pdf>

All Portuguese regions showed a decrease in the prevalence of overweight (including obesity), and this decrease was more pronounced in the Azores and Centro regions. [9] It is believed that underlining this positive trend is the increase in food policy and outstanding national programs in recent years.

Data from a national survey of the Portuguese population show that 17,3 % of children (<10 years old) and 23.6% of adolescents (10-17 years old) have already overweight (assessment criteria accordingly with growth curves of BMI-for-age from WH) and 7,7 children's and 8.7% teenagers have corresponding criteria for obesity. The prevalence of overweight is higher in less educated individuals. [4]

### Associated costs

In Portugal, obesity represents an annual direct course of 1.2 billion euros, an amount equivalent to 0.6% of the wealth produced in the country. [10] According to the most recent data from the Organization for Economic Co-operation and Development (OECD), the costs associated with the treatment of overweight and associated diseases represent 10% of total health expenditure (equivalent to €207 per capita per year).[11]

The obesity-related diseases that most contribute to the highest direct health costs are chronic non-communicable diseases such as diabetes, stroke, ischemic heart disease, and chronic kidney disease. The researchers also point out that the cost of treating these diseases is 88 times higher than the cost of treating obesity. This research also mentions that in 2018, there were 46,269 deaths from obesity-related diseases, which represents 43% of the total deaths that occurred in mainland Portugal that year. [10,11]

It is necessary to reinforce the need for a greater focus on prevention, to strengthen the intervention of primary health care on a multidisciplinary approach, on equitable access to adequate surgical and/or pharmacological treatment, and zero tolerance for the discrimination that people who live with obesity are still victims of.

## **Eating disorders**

Eating disorders (ED) include anorexia nervosa (AN), bulimia nervosa (BN), and binge eating disorder (BED), as well as several conditions listed under "Other Specified Feeding and Eating Disorders (OSFED)" in the fifth edition of the Diagnostic Manual and Statistics of Mental Disorders. [12]

ED is frequent in women, in the higher social classes of industrialized countries. The maximum age of onset of disorders is 19 to 20 years in AN and 16 to 20 in BN. [13] In Portugal, data on the prevalence of eating disorders are scarce or made in small communities. In a retrospective observational study [13] evaluated all episodes of hospitalization from 2000 to 2014 with a primary or secondary diagnosis of ED in Portugal. There was a total of 4485 hospitalizations, where AN was the most frequent (n = 2806). Hospitalizations for attempted suicide were more common among patients with BN (10,1% of hospitalizations for BN) or AN (5,2% of hospitalizations for AN).

Another survey [14] carried out with female students between 12 and 23 years old showed a prevalence of eating disorders of 3.06%. The prevalence of anorexia nervosa was 0,39%, bulimia nervosa 0,30%, and of other specified feeding and eating disorders 2,37%. OSFED accounted for 77.4% of all diagnosed cases of eating disorders in the community, compared to only 13% for AN and 10% for BN. The findings support previous research in clinical settings showing that most individuals seeking help do not have AN or BN according to current diagnostic criteria. In a more recent study, [15] carried out with adolescents between 12 and 18 years old, in the Municipality of Manteigas, found a prevalence of 0,96% of NA and 3,85% of BN, in which the prevalence was self-reported, through the feeding Questionnaire of Disorder Examination - EDE-Q.

The most effective risk predictors were female sex, the interiorization of sociocultural ideals of beauty, and the bonding relationship with the mother. In this way, prevention programs focused on the promotion of a healthy relationship with food and a positive body image, and in the main contexts of adolescents' socialization (school and family) should be set from an early age.

## **4.3 Guidelines and standards**

### **Food guide for the Portuguese population**

In the late 1970s, an institutional task force was created to identify the main health and food-related problems affecting the Portuguese population. In this scene, the "*knowing how to eat is knowing how to live*" campaign, which included the Food Wheel Guide (Fig. 6) was implemented. [16] A Portuguese Food Wheel is a graphic representation that helps you choose the foods that should be part of your daily diet. [17]

The food wheel it's a symbol in a circle-shaped, which is divided into five segments of different sizes, suggesting a recommended proportion between the groups, but without specifying a quantity. The format is associated with the dish commonly used, and, unlike the pyramid, it doesn't hierarchize foods, but gives them equal importance. [17,18]

Sociodemographic and economic changes, with differences in the availability and distribution of food, led to the restructuring of the guide, resulting in a New Food Guide for the Portuguese, that included recommended food portions. [18]

In the New Food Wheel Guide, seven food groups were included. Vegetables and fruits were separated into distinct groups, by their differences in energy and nutrient contents and their diversified use in meals. A new group was added just for legumes, given the importance of Portuguese eating habits and reducing animal protein consumption. The standard food portion, the equivalent portions, and the number of daily portions in each food group were defined. The objective of this new wheel is to lead to a healthier diet: complete, balanced, and varied. [18,19]



Fig. 6 A) Previous Portuguese Food Guide. Source: [https://www.jneb.org/article/S1499-4046\(06\)00030-3/fulltext](https://www.jneb.org/article/S1499-4046(06)00030-3/fulltext) B) New Portuguese Food Guide. Source: <https://alimentacaosaudavel.dgs.pt/roda-dos-alimentos/>

In 2016, as Portugal is a country with Mediterranean characteristics, an adaption of the Food Wheel to the concepts of the Mediterranean Diet was developed. [20] The guide is presented in an interactive version, where it's possible to explore the various food groups, available at: <https://alimentacaosaudavel.dgs.pt/roda-dos-alimentos-mediterranica/>.

The adaptation allows an approximation of the Portuguese food guide to the principle of the Mediterranean diet, which enriched the guide and strengthened this food education tool.

### Nutrition guidelines

In addition to the food recommendations exposed in the Food Wheel, there are guidelines aimed at specific approaches, particularities according to individual life stages and nutritional diseases.

The *Brief Counseling Manual for Healthy Eating in Primary Health Care* (“Manual Aconselhamento Breve para a Alimentação Saudável nos Cuidados de Saúde Primária”) [21] and the respective support tools: *Guide with 10 steps to healthy eating* (“Guia com os 10 passos para uma alimentação saudável”) [22] help to standardize the clinical approach and systematize food recommendations, optimizing the appointment time.

In the context of implementing measures that promote healthy eating, namely relational measures to create healthy eating environments, the importance of adequate nutrition in the early years of life and in the school, environment stands out: *Healthy Eating from 0 to 6 years old* (“Alimentação Saudável dos 0 aos 6 anos”) [23], *Food and Nutrition in Pregnancy* (“Alimentação e Nutrição na Gravidez”) [24], *Adequate Hydration in School Environment* (“Hidratação adequada em Meio Escolar”) [25], *Guidelines for School Buffets* (“Orientações para Bufetes Escolares”) [26].

Regarding changing eating behavior, this is a complex process that requires the use of an intervention that facilitates behavioral change.

*Obesity: optimization of the therapeutic approach in the national health service* (“Obesidade: Otimização da abordagem terapêutica no Serviço Nacional de Saúde”) comes to contextualize the best nutritional therapy strategies for obesity, based on the most recent scientific evidence, and on the specificities: energy density, meal patterns, intake speed, and physical activity, for obesity treatment. [27]

About eating disorder, Portugal doesn't present specific guidelines, following international recommendations. The American Dietetic Association guidelines for the treatment of patients with eating disorders postulate a nutritional rehabilitation program, as well as medical and psychiatric follow-up. [28]

## 4.4 National and local initiatives to promote health

### National initiatives for healthy eating

Public policies have the potential to improve the population's diet by altering the food environment and are more likely to result in changes, as they interfere with physical and economic availability. [29] The importance of the development of public policies in Portugal gained prominence in 2012, with the creation of the National Program for the Promotion of Healthy Eating (“Programa Nacional de Promoção da Alimentação Saudável” - PNPAS). It is one of the priority health programs of the National Health Plan of the Directorate-General of Health and aims to promote the health status of the population, acting on one of its determinants: food. [30]

The Directorate-General of Health also coordinates the Integrated Strategy for the Promotion of Healthy Eating (“Estratégias Integradas de Promoção da Alimentação Saudável” - EIPAS), which includes a set of intervention measures through healthy policies. [31] According to the Healthy Food Environment Policy Index (FOOD-EPI), a tool developed to assess the degree of implementation of public policies with an impact on the food environment, Portugal is one of the countries with the best scores. Portugal obtained in 77% of the indicators included in this analysis a moderate or high degree of implementation (56% moderate and 21% high degree of implementation). Food and nutrition policies are internationally recognized for their comprehensive approach, including measures that promote the reformulation of products and food labels, and measures to regulate food advertising aimed at children and the food supply in different public spaces. [29]

### Campaigns

Through educational campaigns, the National Program for the Promotion of Healthy Eating works to change the food choices of the Portuguese.

The latest campaign *Eating better, a recipe for life* (“Comer melhor, uma receita para a vida”) aims to add value to some foods that are still undervalued, appreciated, and consumed in the diet of Portuguese, such as fruits, vegetables, legumes, and water. (Fig. 7)



Fig. 7 A) Poster “Eating better, a recipe for life”. B) Poster “Water, the mega drink”. Source: <https://alimentacaosaudavel.dgs.pt/>

In previous years, other campaigns have emerged with a focus on water consumption: *Water, the mega drink* (“Água, a mega bebida), and on reducing the consumption of salt: *Together against salt* (“Juntos contra o sal”) and sugar: *Sugar hidden in food* (“Açúcar Escondido dos Alimentos”). The disclosures are made through digital media, in which messages and incentive posters are published, and in television advertisements, with the presence of several public figures. On the website, you can find the campaigns, videos, and posters: <https://alimentacaosaudavel.dgs.pt/pnpas/modificacao-da-procura-educacao/campanhas-sobre-alimentacao-saudavel/>

### Labels decoder

Regulation (EU) no. 1169/2011 relative to the provision of information to consumers on foodstuffs establishes the new requirements for food labeling, thus ensuring that citizens receive clearer, more complete, and accurate information about the content of food. [32]

The front-of-pack (FOP) labeling has the function of guiding the consumer to the constituents of food, thus promoting healthier food choices. [33] However, this doesn't mean that consumers are using it as a tool in choosing the items that should compose their diet. Scientific evidence demonstrates that 40% of Portuguese don't understand the current nutritional information on food product labels and the need to simplify this information. [34]

To help consumers, voluntary nutrition labeling models have emerged. The Federation of Portuguese Agro-Food Industries and some retail brands present a nutritional information model in 2002, with voluntary implementation adopted by some retail brands, namely Pingo Doce. Another model of voluntary nutrition labeling used in Portugal is the nutritional traffic light, initially developed by the Food Standards Agency in the United Kingdom. It was introduced in Portugal in 2009 and adopted by the Continente brand for its products. [35]

Another summary interpretative model that has gained importance is the Nutri-Score. It consists of a colorful graphic representation, which also uses letters, and classifies the nutritional profile of a food product into five categories, between green (letter A) and red (letter E). [36] (Fig. 8)



<p>Federation of Portuguese Agro-Food Industries model</p>	 <p>*Doses de referência para um adulto médio (6400 kJ/2000 kcal)</p>					
<p>Traffic Light</p>	<p>Each grilled burger (94g) contains</p> <table border="1" data-bbox="715 1507 1173 1630"> <tr> <td>Energy 924kJ 220 kcal 11%</td> <td>Fat 13g 19%</td> <td>Saturated 5.9g 30%</td> <td>Sugars 0.8g &lt;1%</td> <td>Salt 0.7g 12%</td> </tr> </table> <p>of an adult's reference intake Typical values (as sold) per 100g: Energy 966kJ / 230kcal</p>	Energy 924kJ 220 kcal 11%	Fat 13g 19%	Saturated 5.9g 30%	Sugars 0.8g <1%	Salt 0.7g 12%
Energy 924kJ 220 kcal 11%	Fat 13g 19%	Saturated 5.9g 30%	Sugars 0.8g <1%	Salt 0.7g 12%		
<p>Nutri-Score</p>						

Fig. 8 Different FOOD Labelling Systems

Portugal was one of six European countries with the most food labeling schemes, however, the variety of nutrition labeling can cause difficulties for consumers, who would prefer a single scheme. [37] To solve this problem, one of the strategic axes in the National Program for Promotion of Healthy Eating in Portugal was the Label Decoder. [38] (Fig. 9) helps consumers interpret food labels and categorize their total fat (“gordura”), saturated fat (“gordura saturada”), sugars (“açúcares”), and salt (“sal”) content in high, medium, or low.



Fig. 9 Portuguese Label Decoder. Source: <https://alimentacaosaudavel.dgs.pt/descodificador-de-rotulos/>

However, there is an exhaustive need to enact legislation for the standardization of nutritional information on FOP labels. Standard criteria should be created by the Government, with a national recommended scheme.

The Nutri-Score, developed by the French Ministry of Health and defined as the national reference, and adopted in some other countries such as Belgium and Spain, demonstrates a significantly improved consumer's ability to better understand nutritional information and make food choices, compared to other models. Nutri-score also counts with the strong support of the European consumer's association. [39]

The use of simplified nutrition labeling models increases the transparency about the food we eat and could help to make diets healthier, both by helping individuals to make informed choices and by incentivizing producers to reformulate existing products and develop healthier alternatives. [33]

### Food reformulation

Improving the nutritional composition of available foods is part of the national food and nutrition strategy developed by the National Program for the Promotion of Healthy Eating (“PNPAS”) and the Integrated Strategy for the Promotion of Healthy Eating (“EIPAS”). For the reformulation of the levels of salt, sugar, and trans fatty acids in different categories of food products, a collaboration protocol was signed in 2018 between the Directorate-General for Health, the National Institute of Health Doctor Ricardo Jorge, the Portuguese Association of Distribution Companies, the Federation of Portuguese Agro-Food Industries and NielsenIQ. [40]

In 2016, a protocol was signed to limit the net weight of individual sugar doses to a maximum of 5/6 g. And in 2018, the grammage of packages was reduced to 4g. With this work started in 2016, the reduction of the net weight of sugar packets by almost 50% has been encouraged. Regarding salt, in 2017, a protocol was established to promote the reduction of salt content in bread. Annual targets were set to reduce the salt content in bread, with the final target for 2021 being 1.0g of salt per 100g of bread. The collaboration protocol also defined limits for the content of trans fatty acids in pastry products, as this is one of the food categories with the highest levels of trans fatty acids. Promoting the reduction of the content of trans fatty acids in products from the bakery and pastry sector to values below 2g and 1g of trans fatty acids per 100g of fat used in the preparation of these products. [40]

The collaboration between entities made it possible to reduce more than 25 tons of salt and 6256 tons of sugar, between 2018 and 2020.

### Regional initiatives for healthy eating

The health system in Portugal is organized by 5 main health administrative regions (“Administração regional de saúde” –ARS). Portugal has also two Autonomous Administrative Regions: Madeira and Açores with their obesity realities and programs to tackle them.

Focusing on the Health system of the mainland, this is organized according to the five main regions of Portugal: North, Center, Lisbon and Tejo Valley, Alentejo, and Algarve. Since the implementation of the National Program for the Promotion of Healthy Eating, all regions have been adopting some national initiatives - or even international ones, as we mentioned in the COSI example – and regional entities have been launching their initiatives through time.

In Table 1 we can see some of the initiatives taken at the regional or local level related to healthy eating and the fight against obesity.

Table 1. Regional Administration of Health and its regional programs related to healthy eating or tackling obesity

Health Administration Regions	Intervention Programs
ARS Norte	“PASSE – Programa Alimentação Saudável em Saúde Escolar” (Healthy Eating Program in Scholar Health)
ARS Centro	“Pão.come” (Bread eat); “Aquarela Alimentar” (Food Watercolor)
ARS Lisboa e Vale do Tejo	No specific program
ARS Alentejo	“A minha lancheira” (My lunchbox); “Lancheira Sorriso em Movimento” (Smile Lunchbox on the move); “Crescer com peso saudável” (grow up to a healthy weight); “5 ao dia, faz crescer com energia” (5 a day, makes it grow with energy); “Da caneta até ao prato” (From pen to plate); “Sopas e Aromas” (Soups and aromas)
ARS Algarve	MEDITA – Project to fight childhood obesity on Algarve region “Jogo Ludus Med” app

The PASSE program is a good example of an intervention program that exists since 2008. At least 63% of the schools from North region has adopted this program. More than 380.326 alumnus, aggregated in 18.787 classes benefited from direct intervention of the program. Acquisition of healthy eating habits and food behavior changes are central targets for future generations. In order to involve all the actors, this program addresses also parents and food manipulators more information can be found in the website, including some resources for those who want to use some of the PASSE tools: (<https://passe.com.pt/destaques>)

ARS Centro developed some projects and strategies in food, to intervene in chronic diseases and their determinants: healthy eating, promotion of physical activity and diabetes. In

this context, there are projects such as: “Pão.com”[41], where 10,595 analyzes of analytical monitoring of the salt added to bread in 900 bakeries in the region were evaluated, and the “Food Watercolor” [42] project, to improve the knowledge of health professionals in nutrition.

The ARS Lisboa e Vale do Tejo has health programs but no specific information on its website about dietary interventions or promotion of healthy eating programs. In contrast, ARS Alentejo have several examples of regional/local programs that have been implemented in the last years, either to tackle the snacks that children and adolescents bring from home to eat at school, with several projects related to their lunchboxes, or to address what is offered to them in their school canteens. [43]

The Algarve Region participated in the COSI initiative and recently with the MEDITA project has also launched an app to promote the nutritional literacy about Mediterranean Diet. The MEDITA project is a European Commission financed project aiming at promoting healthy eating habits in the region of Algarve in Portugal, and Andaluzia in Spain. The Project includes the diagnosis of eating habits of children and adolescents of the region and includes scholar interventions to improve them. The goal is improving dietary patterns, improve nutritional status and of children and prevent obesity. [44] The app is one of the examples of a material created by the project which is available to everyone on Google Play, available in: [https://play.google.com/store/apps/details?id=com.magiklabs.g\\_ludusmed&hl=en&gl=US](https://play.google.com/store/apps/details?id=com.magiklabs.g_ludusmed&hl=en&gl=US).

Using gamification in the promotion of healthy eating knowledge a space of freedom to fail and to learn around nutrition is possible without any kind of judgement.



Fig. 10 App created by ARS Algarve regarding the project MEDITA –Mediterranean Diet Promoting Health

### Associations

There are also good examples of associations created to promote healthy eating in Portugal. The association “Vitamimos” was created as a healthy eating center and was recognized nationally and internationally with several prizes including the *Best Youth Nutrition Education Centre & Innovation Award for Obesity Prevention Initiatives 2019*, on the category of Fitness and Nutrition Awards and a recognition by Global Health and Pharma. [45]



Fig. 10 A) Poster of the activity “eco-chef”. B) Image representative of the education center. Source: <https://www.vitamimos.pt/>

Another important association in Portugal is ADEXO – Association of patients or ex-patients with obesity from Portugal (<https://www.adexo.pt/>). This association has an active role in helping its members to have access to treatment and insurance and to fight against the discrimination they face. Besides support members at several levels, it also works in the prevention area, namely at children and youth. Adexo’s most recent awareness campaign includes a song in collaboration with a famous Portuguese singer “Ana Bacalhau” which is called “eu vou” meaning “I’m going”. This Portuguese song intends to incentive action, in this case, the action of seeking professional help and advice, not listening to external pressures but in a deliberate active action of having control of their lives and searching for their own wellbeing: (<https://www.truthaboutweight.global/pt/pt/mude-o-ritmo-da-sua-vida.html>).

### Active lifestyle initiatives

Physical activity improves cognitive function, self-regulation, and positive affect, as well as self-esteem, self-perception, and overall quality of life. The positive effect of physical activity shows a improving of eating behavior and self-regulation. [8]

In combination with diet, behavioral support, and treatment of comorbidities, physical activity is recognized as an integral part of the management of people with overweight or obesity. [4] To combats and overcome this global problem: obesity, initiatives and projects that encourage the practice of sports are adopted.

At the national level, the *National Program for the Promotion of Physical Activity* (“Programa Nacional para a Promoção da Atividade Física” – PNPAF) was created in 2016 (Order nº 6401/2016), constituting one of the Priority Health Programs. It works in harmony with the National Health Plan and with the main international guidelines in the area, namely the World Health Organization. [46]

The largest public campaign to promote physical activity implemented in Portugal was *Follow the whistle – physical activity calls for itself* (“Siga o assobio – a atividade física chama por si”), which aimed to improve activities and increase readiness to practice physical activities, having as a group target the Portuguese population aged 35 to 65 years. The main campaign information can be viewed at: <https://www.sigaoassobio.pt/pt>.

At schools, besides the regular classes of Physical Educations which usually happen twice a week, schools may also offer the opportunity to integrate *School Sports* (“desporto escolar”). School sports is a program that comprises 44 different modalities and encourages the practice of sport playfully and recreationally, thus promoting healthy habits in young people and fighting obesity in children and young people. [47] Some municipalities also offer programs that take

place during school holidays called *Sports holidays*. (48) During the summer, young people enrolled in the program have access to different holidays with recreational and sports activities.

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