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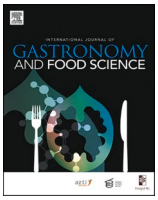

From the economic crisis to the COVID-19 pandemic in Spain: The challenges for healthy eating in times of crisis

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1. Introduction

Spain has been one of the European countries most affected by the pandemic caused by the COVID-19 virus. On March 14, 2020, the government declared a state of alarm in the country and established a lockdown, with restriction of movement, physical distancing, and isolation of citizens (Real Decreto 463/2020, 2020). The most restrictive quarantine measures in Spain lasted 49 days (from 15 March to May 2, 2020), followed by four phases of relaxation that allowed for progressively greater movement outdoors, a return to on-site working, and leisure activities within the framework of what was termed "new normality". During this period, with the exception of health personnel and essential services, all citizens had to remain at home most of the time. The quarantine rules allowed people to go out only to buy basic supplies at local food shops and supermarkets, but not to walk or exercise. This meant that the entire population, including children, had to stay indoors 24 h a day.

As the cause of this situation, COVID-19 created a crisis scenario in relation to food, such that researchers in the fields of nutrition, health, agri-food production, commercial catering, economics, and sociology are beginning to offer information to analyse a period of change that has become an observable social experiment.

Spain has also experienced another major crisis. The great recession of 2008 caused by the bursting of the housing bubble and the fragility of the banking system led to a significant fall in people's incomes and an increase in food insecurity. Spain was one of the economies that was particularly affected by the recession and the rise in inequality, especially between 2008 and 2014. The consequent cuts in public services as part of a package of austerity policies, high levels of unemployment, the rise in serious poverty, and increased precariousness in everyday life influenced the Spanish population's diet and ways of consuming food (Medina et al., 2016; Gracia-Arnaiz, 2014).

From the perspective of the sociology of food, this paper aims to contribute to diagnosing some of the features of the changes in eating that occurred in the two crises, the economic and COVID-19 pandemic. Although we do not yet have all the information that would be desirable, the work is based on the data provided by the National Health Survey (hereafter ENSE) and the European Health Survey in Spain (hereafter EESE) from the National Institute of Statistics (Instituto Nacional de Estadística, 2022).

The aim of this study is to find out whether diet improved or worsened during the economic crisis (2008–14) and the crisis of the pandemic (2020–), which is carried out by monitoring the healthiness of Spanish people's diet during these two periods of crisis. In addition, it shows which groups are most at risk in terms of diet quality, considering the variables age and sex. Comparing the two crises allows us to understand how abrupt changes can affect diet and to investigate details of the effects of the COVID-19 outbreak on the healthiness of the population's diet. Comparison with the economic crisis of the past decade allows for a more accurate understanding of the changes, helping to ascertain whether they are cyclical or not.

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2. Literature review

Food is one of the areas of daily life that is affected during periods of crisis. Restrictions on a household's daily consumption and difficulties in meeting everyday expenses as a result of the economic crisis of 2008-14 made the Spanish population's ways of eating more precarious. Studies indicate that, during this time, there was a reduction in food purchases and a decline in the nutritional quality of meals (Antentas and Vivas, 2014). The population also used a number of dietary strategies to adapt to the economic constraints they faced. These included reducing food expenditure and a greater reliance on supermarkets' own brands to cut the amount of money spent on food (Gracia-Arnaiz, 2014). Medina et al. (2016), in a study in Catalonia, confirm that there was a decrease in the consumption of fruit, vegetables, fresh fish, seafood, and meat, because of their price. Similarly, Martín Cerdeño (2010) shows variation in food consumption based on social class, so that upper and upper-middle class households maintained a higher per capita consumption of meat than lower class households.

However, vulnerable groups are the people who were most affected by the economic crisis. Díaz Méndez et al. (2018) indicate how these groups based food choices on criteria of austerity and restraint, while at the same time resorting to institutional social assistance. Gracia-Arnaiz (2022) also shows that people living in precarious conditions in Spain restructured their food patterns and changed their ways of obtaining food. Saving strategies included buying less frequently, looking for cheaper brands, preparing simpler dishes, growing food, and recycling food leftovers. There was also a greater reliance on charities.

During the early months of the pandemic, European researchers interested in food started to publish results of their research, focusing on the period of lockdown. The aim of this work is to assess the initial impact of the health crisis on food and eating and to see what effects the period of restrictions had on food habits and diet. Most of the research published so far has been carried out by conducting self-administered online surveys about food consumption and purchasing habits during periods of confinement, based on the respondents' perception of the changes. The limitations of the methodology are highlighted by the researchers themselves, but justified by the urgency of providing information to allow us to assess drastic and worrying changes in the population's health, as well as the specific effects on particularly vulnerable groups.

During the lockdown, the effects on household diets in Europe do not seem to have been uniform. Some studies show a worsening of diets, yet others find an improvement, and some report a variety of changes in both purchasing and consumption. Studies in the fields of health and/or nutrition predominate, giving particular prominence to the impact of changes on population of children and adolescents.

Studies have reported a worsening of diet during lockdown in countries such as France, Italy, and Spain. Increased calorie intake (Marty et al., 2021), increased consumption of junk food (Dondi et al., 2021), or simply increased consumption of flour-based and/or sugary foods rather than fresh produce (Bracale and Vaccaro, 2020) underlie the deterioration in diet that these analysts point to. Marty et al. (2021) state that the nutritional quality of the diet in France decreased significantly during the first month of confinement and that respondents consumed more calories per day, going from 1700 kcal/day to 1935 kcal/day.

Italy saw a worsening of children's diets due to increased consumption of junk food, snacks, and soft drinks (Dondi et al., 2021). Parents reported that their children ate more than before confinement, and one third of respondents reported an increase in children's weight, especially among families who had lost income, but also in affluent areas of northern Italy. Bracale and Vaccaro (2020) also describe an increase in the consumption of pasta, flour, eggs, long-life milks, and frozen foods, alongside a trend towards reducing fresh and healthy foods. They also report an increase in the home production of bread, pizza, and cakes.

This decline in diet quality is attributed to a variety of factors. Kaat et al. (2021) observe a trend in French families towards more permissive feeding practices. Parents report having fewer rules and limits, giving children more autonomy over decisions about what, when, where, and how much to eat. They also report a significant decrease in their regulation of mealtimes and meal locations in the home, as well as a greater intake of "comfort foods". In Italy, the authors attribute the increased consumption of some foods to their symbolic value and the tendency to move some habits of external socializing into the domestic sphere. This contributed to an increase in home-cooked meals (Bracale and Vaccaro, 2020).

Many of the changes in dietary consumption are attributed to emotional states caused by lockdown, including depression, stress, and boredom at the loss of daily routines in families and among their members (Kaat et al., 2021; Marty et al., 2021). Others, however, link the worsening of diet quality to a lack of physical activity, especially in adolescents, relating this inactivity to a lower consumption of fruit and vegetables and a higher consumption of energy-dense snacks and drinks, fast food, and ultra-processed foods (Ruíz-Roso et al., 2020).

In contrast, other research has attested to improvements in eating behaviour in the population during confinement. Glabska et al. (2020) report an improvement in food choice criteria among Polish adolescents before and after the pandemic. Criteria of health and weight control appeared as the main determinants for deciding what to eat as opposed to criteria such as sensory appeal or mood, which had predominated in food choices before the pandemic. This is also confirmed in the study by Snuggs and McGregor (2021) in the United Kingdom in relation to the change in motivations for food choice during lockdown. They highlights the importance of health and weight concerns during this period. However, the criterion of health does not appear to be widespread and these researchers link it to people who had positive healthy eating patterns before pandemic, and also to people aged between 18 and 28, who downgraded their previous food preferences (based on food's convenience or familiarity) in favour of health, weight control, and/or natural food content. Also worth noting were changes in the habits of parents and caregivers, who gave increased importance to meal preparation and moved towards healthier, more shared family eating patterns, instead of prioritizing ease of meal preparation and cooking that had seemed to dominate in the period prior to confinement in the United Kingdom. An increase in the importance of health as a criterion for food choice is also found in comparative studies between Italy and the United States (Rodgers et al., 2021).

Di Renzo et al. (2020) discuss how much the Italian population followed the Mediterranean dietary pattern during confinement, concluding that there was no deterioration and highlighting that the consumption of fresh produce did not decrease despite generalized difficulties of food supply (Sgroi and Modica, 2022). At the same time, consumption of salty snacks, processed meats, and sugary drinks decreased. They also confirm an increase in the consumption of home-made desserts, bread, and pizzas, which seems to indicate a greater dedication to cooking among Italians.

In the Netherlands, the work of Poelman et al. (2021) on eating habits during confinement showed little change, but highlighted an improvement among younger people who reported greater dietary changes during confinement than older people. Overweight and obese participants in this study were more likely to report that they had found it more difficult than usual to make healthy choices, that they ate more, and ate more snacks, and (non-)alcoholic drinks. Dutch women were also more likely than men to report that they found it more difficult than usual to make healthy food choices. For the researchers, this emphasizes the persistence of (healthy or unhealthy) dietary patterns that are difficult to change even when there is an abrupt change in daily life.

Spanish studies have clearly shown a transformation of routines that has affected the way food is provided and the composition of the diet. All published studies on eating in this period indicate that it is possible to discern an improvement in diet quality during confinement, although

some studies show that not all patterns in eating habits improved (Pérez Rodrigo et al., 2021).

Most Spanish studies mention how people are orienting their shopping and the composition of their daily intake towards a healthier diet (Fiszman et al., 2020; Pérez Rodrigo et al., 2020; Gaspar el al, 2020; Sinisterra-Loaiza et al., 2020; Mulet Pascual et al., 2020), and it is also common to see references to Spanish people's interest in taking care of themselves and recognizing the importance of diet as a factor in contributing to health and well-being in this period of crisis (Centro de Investigaciones Sociológicas, CIS, 2021; Mulet Pascual et al., 2020; Gaspar et al., 2020). Some papers have also commented on a link between dietary changes and social or ethical responsibility through consumption (Centro de Investigaciones Sociológicas, CIS, 2021; Gaspar el al. 2020; Mulet Pascal et al. 2020).

Spanish studies confirm a marked rise in interest in cooking, reflected in preparing more elaborate meals or some foods that were formerly purchased ready-made but are now made at home, such as bread. This is related to a higher consumption of flour and a lower consumption of processed foods (Fiszman et al., 2020; Gaspar et al., 2020; Sinisterra-Loaiza et al., 2020), but also to a fall in perishable foodstuffs such as fish and seafood (Fiszman et al., 2020). The increase in culinary activities is further corroborated by analysing internet searches on food and recipes (Fiszman et al., 2020).

In general, an improvement in diet is confirmed in most Spanish studies and is associated, in particular, with an increase in the consumption of vegetables and fresh fruit. However, for some, there is evidence of an increase in the consumption of sugary and alcoholic beverages (Pérez Rodrigo et al., 2020), while other researchers find that their consumption has decreased (Sinisterra-Loaiza et al., 2020). According to Pérez Rodrigo et al. (2020), people who were less active before lockdown have altered their eating and physical activity habits to a greater extent than others, improving their diet more. In contrast, other researchers (Gaspar et al., 2020; Sinisterra-Loaiza et al., 2020) find that weight control has been a spur to changing towards healthier habits and, in general, greater concern for what is eaten has led the population to eat more healthily.

As can be seen, there are contradictions in the results of the works that have been published referring to the period of mobility restrictions in Europe. But it is possible that these are not so many heterogeneous responses as premature results, as well as responses that must be taken with caution for methodological reasons (Meiselman, 2022). The comparative works that are appearing point both to a diversity of responses depending on the country and to common behaviors. During confinement, motivations related to health have coexisted with those related to taste. This duality is not necessarily contradictory, but it marks differences in social variables such as educational level and gender (Lamy et al., 2022).

The present study, also using preliminary data from Spain's National Institute of Statistics, aims to answer the same question and to determine whether there has been an improvement or worsening in following a healthy diet during the pandemic crisis, in an attempt to give an indication of the consequences of the COVID-19 crisis for health.

3. Methods

3.1. Study design

In order to make a comparison between the economic crisis and the COVID crisis, we have taken our data from the National Health Survey (ENSE) and the European Health Survey in Spain (EESE), both carried out by the National Statistics Institute (INE) and national in scope. As outlined in the ENSE Standardized Methodological Report, the national health surveys and the European health surveys are considered to be comparable and parallel, ensuring comparability over time for most variables. These surveys are carried with a periodicity of between 3 and 5 years.

3.1.1. National health survey (ENSE)

In the case of the ENSE, data from the 2006 survey and the 2011–12 survey have been analysed as indicative of two periods: one prior to the economic crisis (2006) and the other during the crisis (2011–12). It should be noted that the fieldwork for the ENSE 2006 was carried out from June 2006 to June 2007. The data collection period for the 2011–12 survey was from July 2011 to June 2012 (ENSE, 2006; ENS, 2011–12).

Both the 2006 and the 2011–12 ENSE reports provide data for the population over the age of 1 year old, but their age categories differ slightly. In 2006, two of the age ranges are 5–15 and 16–24; in 2011–12, the ranges are 5–14 and 15–24. The others are identical for both surveys. In EESE 2020, the age categories are also different: 15–44, 45–64, 65 and over.

In order to carry out this study, we have used the questionnaire's section referring to the frequency of consumption of various foods that appear in all the health surveys used: fruit, vegetables, meat, fish, and pulses.

3.1.2. European Health Survey in Spain (EESE)

In the case of the EESE, the 2020 data have been taken as the basis for analysis, as the survey itself gives data for "before" and "during the pandemic", referring to the period before and after the lockdown and the following months.

The collection of information in the EESE had to be adapted as a result of the COVID-19 pandemic and consequent confinement. After March 17, 2020, face-to-face interviews were replaced by telephone interviews. The data that EESE 2020 classifies as "before the pandemic" and "during the pandemic" are the result of dividing the sample into two periods: the first from week 1–36 and the second from week 37–52 (EESE, 2020).

3.1.3. Concept of healthy diet

The analysis is based on the concept of healthy diet, corresponding to the characteristics of the Mediterranean Diet, drawn up by the Spanish Society of Community Nutrition (SENC).

The Mediterranean diet rose to fame due to its associated health benefits and continues to generate interest, especially in the face of the growing challenge of malnutrition in all its forms – undernutrition, micronutrient deficiencies, and overweight and obesity (Sofi et al., 2010). The diet is special because it is based in a region and linked to a specific geography, related not only to physical resources (soil, microclimate, landscape), but also to a historical context, cultural and social resources, including traditional knowledge and practices (Hachem et al., 2020). The Mediterranean diet is characterised by abundant consumption of plant-based foods (fruits, vegetables, bread and other cereals, pulses, nuts); olive oil as the main source of lipids; moderate consumption of wine; low to moderate consumption of dairy products (cheese and yoghurt), fish, chicken, and eggs; and low consumption of red meat and cured meats (González Statetz et al., 2015). Studies indicate that the Mediterranean diet is associated with a lower risk of obesity, type 2 diabetes, and cardiovascular disease, as well as a lower risk of some types of cancer (colon and rectal, stomach, and/or breast) (Estruch et al., 2018).

The Spanish Society of Community Nutrition (Sociedad Española de Nutrición Comunitaria, SENC) therefore proposes: daily consumption of fruit and vegetables, eating pulses once or twice a week, and eating meat and fish three or more times a week, but not every day (SENC, 2018). These five food categories constitute the basis of a healthy diet and are the ones used for this study's analysis. It should be noted that the SENC's recommended consumption of meat refers to what it calls "white meat", from grass-fed animals or poultry, while it recommends only occasional consumption of red meat and cured meats. In this context, we have had to use the category of the health surveys' "meat" without being able to differentiate the types of meat consumed. However, these surveys include another category labelled "sausage and processed meat", which

is not used, as these foods do not constitute part of the basis of the Mediterranean Diet and consumption is recommended only occasionally.

The frequencies for consumption given in the questionnaires are similar in all of them: daily; three or more times a week, but not daily; once or twice a week; less than once a week; never or hardly ever. In the case of the surveys used, it should be noted that the categories given are identical for meat, fish, and pulses, but differ slightly for the other foods. In the 2006 survey, vegetables are referred to as *verduras* and *hortalizas* (distinguishing green and other vegetables), whereas in 2011–12 and 2020 they are referred to as *verduras*, *ensaladas*, and *hortalizas* (specifying salad leaves as well). Fresh fruit is referred to as fresh fruit in all three surveys, but 2011–12 and 2020 adds in brackets "excluding juices". Finally, the 2020 survey uses the category "Never" rather than "Never or hardly ever".

For each of the five categories mentioned above, the change in the frequency of consumption was analysed to determine the percentages of consumers who followed a healthy diet during both the economic crisis and the pandemic crisis. Subsequently, the profiles of the consumers who most closely followed the consumption guidelines were broken down by age and gender. We have chosen to examine only the consumption frequencies of these two variables because the EESE 2020 only provides data on these two variables and, despite the fact that, for the economic crisis, the ENSE surveys give more detailed results and a larger number of variables about how closely the recommendations are followed (Díaz-Méndez and García-Espejo, 2019). Although it may be limiting not to include other variables, these have been confirmed as the most relevant for explaining how fully guidelines on a healthy diet are followed (Brown and Roberts, 2011; Miqueleiz, 2014; Díaz-Méndez and Garcia-Espejo, 2019). It is also necessary to consider the limitations of the current EESE 2020 data referring to the pandemic, as the microdata do not include the variable to allow separating the two periods "before" and "during" the pandemic.

4. Results author

Fruit, vegetables, meat, pulses, and fish are common elements of the Spanish diet, constituting the basis of what is known as the Mediterranean Diet. Based on the analysis of the frequency of consumption of these five foods, we set out the changes in the how closely the population followed a healthy diet "before" and "during" the economic crisis of the last decade, and "before" and "during" the COVID-19 crisis. The purpose is to ascertain the stability of diets or, on the contrary, the shifts that took place in periods of crisis, but in particular to examine any changes in diet during the pandemic crisis.

The first point to note when analysing what diet was followed during the economic and COVID crises is that the recommended guidelines are not widely followed by the population and there are some notable alterations during both crises as shown in Table 1 and Table 2.

In both periods, a proportion of the Spanish population—in many cases over half of the population—does not meet the dietary recommendations. However, it should be noted that the failure to meet these targets shows variations depending on the type of foodstuff, and failure to follow the guidelines is particularly notable in the case of fish consumption: although the recommended frequency is 3 or more times a week (but not daily), it is most common to eat fish once or twice a week. This target was missed during both crises (Tables 1 and 2).

Table 1
Population following the guidelines for a healthy diet before and during the economic crisis (percentage of the whole population).

Recommended consumption (SENC)	FRUIT daily	VEGETABLES daily	MEAT 3 or more times a week, but not daily	PULSES 1 or 2 times a week	FISH 3 or more times a week but not daily
2006	66.81	40.64	54.76	57.57	38.84
2011–12	61.43	45.78	57.54	60.17	37.44

Source: ENSE 2006 and ENSE 2011–12. Population over the age of 1 year old.

Table 2
Population following the guidelines for a healthy diet before and during the pandemic crisis (percentage of the whole population).

Recommended consumption (SENC)	FRUIT daily	VEGETABLES daily	MEAT 3 or more times a week, but not daily	PULSES 1 or 2 times a week	FISH 3 or more times a week but not daily
Before the pandemic	67.81	47.58	63.61	55.68	38.82
During the pandemic	67.41	44.67	71.53	60.67	43.8

Source: EESE 2020. Population aged 15 years and over.

In relation to the general changes, it can be observed that during the economic crisis, the amount of fruit and fish consumption decreased (Table 1). The confinement and pandemic has, however, been a period of improvement in the number of people reaching the targets for almost all produce except for vegetables (Table 2). However, it should be noted that for no food item was consumption behaviour radically contrary to the guidelines and that people's consumption frequency was close to the recommended levels. In other words, the crises alter the frequency of consumption of basic dietary foodstuffs, but do not drastically modify their consumption.

However, in both the economic crisis and the pandemic, the data indicate that these variations do not affect all groups equally, with significant dietary inequalities in those following healthy diets between men and women and between different age groups.

4.1. The economic crisis: data from the Spanish Health Surveys 2006 and 2011–12

The figures indicate that there was a 5-point drop in daily fruit consumption overall during the economic crisis (Table 1). In both periods, it was the older age groups that best followed the recommendation to eat fruit daily, although it is worth noting that it was the younger age groups (aged 15–34) who changed their habits least, as the decrease in daily fruit consumption was lower among them than in other age groups (Table 3). The decrease was similar for men and women (4 points for men and 5 points for women) (Table 4).

More people followed the guidelines for vegetable consumption during the years of the economic crisis with a rise of 5 percentage points from 40.64% in 2006 to 45.76% in 2011–12) (Table 1).

In 2006, consumption of vegetables increased with age, albeit decreasing slightly from age 65 onwards. Daily consumption of vegetables is more frequent among women (45.67%) than among men (35.46%) (Table 4).

During the year of the crisis, 2011–12, 45.67% of the population consumed vegetables on a daily basis (Table 1). The percentage of people who followed the guidelines for a healthy diet increased with age compared to 2006 (32.66% of 15–24-year-olds consumed vegetables daily, and 55.86% of those aged 65–74) (Table 3).

From 2006 to 2012, an increase in the number of people following the recommendations for healthy meat consumption was detected, up from 54.76% in 2006 to 57.54% in 2011–12 (Table 1). All consumption frequencies showed an increase, except for the noteworthy and clear decrease of almost 7 percentage points for those consuming meat daily (down from 17.37% in 2006 to 10.55% in 2011–12) (Table 3). These same variations were similar between men and women, with those following the health recommendations increasing by 3 percentage points in both sexes, which also meant a very similar reduction in daily

Table 3
Frequency of consumption of foods before and during the economic crisis (2006 and 2011–12), by age (percentage).

	Age range	Daily	3 or more times a week, but not daily	1 or 2 times a week	Less than once a week	Never or almost never
FRUIT						
2006	Aged 16 to 24	46.21	20.39	16.30	8.15	8.94
	Aged 25 to 34	53.58	19.13	15.25	5.11	6.92
	Aged 35 to 44	64.15	15.84	11.93	3.44	4.64
	Aged 45 to 54	72.82	11.86	9.15	2.54	3.63
	Aged 55 to 64	81.10	9.03	5.01	2.24	2.61
	Aged 65 to 74	84.34	7.58	4.84	1.40	1.84
	Aged 75 and over	86.71	6.48	3.71	1.40	1.70
2011–12	Aged 15 to 24	41.72	25.26	17.99	6.18	8.85
	Aged 25 to 34	48.47	22.51	16.00	6.09	6.94
	Aged 35 to 44	56.95	22.09	12.29	3.95	4.72
	Aged 45 to 54	62.39	19.30	9.55	3.97	4.78
	Aged 55 to 64	74.22	13.43	7.52	2.50	2.32
	Aged 65 to 74	77.59	13.62	5.93	1.43	1.43
	Aged 75 and over	78.28	13.57	5.05	1.20	1.89
VEGETABLES						
2006	Aged 16 to 24	27.55	30.76	26.46	8.52	6.72
	Aged 25 to 34	35.96	33.19	23.59	4.26	3.00
	Aged 35 to 44	40.10	35.25	19.63	3.15	1.87
	Aged 45 to 54	47.58	31.67	17.64	2.26	0.85
	Aged 55 to 64	51.48	31.03	14.62	2.25	0.63
	Aged 65 to 74	50.49	32.11	14.07	2.38	0.95
	Aged 75 and over	48.07	33.71	14.38	2.15	1.69
2011–12	Aged 15 to 24	32.66	35.12	19.83	7.50	4.90
	Aged 25 to 34	40.28	35.87	17.4	4.30	2.16
	Aged 35 to 44	47.52	34.62	12.95	3.26	1.66
	Aged 45 to 54	49.18	35.90	11.31	2.23	1.38
	Aged 55 to 64	54.13	32.26	10.82	1.94	0.85
	Aged 65 to 74	55.86	30.30	10.70	2.16	0.98
	Aged 75 and over	52.85	32.13	10.88	2.19	1.96
MEAT						
2006	Aged 16 to 24	22.44	57.13	19.17	0.82	0.43
	Aged 25 to 34	21.84	56.31	19.29	1.29	1.27
	Aged 35 to 44	18.98	57.36	21.28	1.54	0.85
	Aged 45 to 54	16.98	55.19	24.56	1.75	1.52
	Aged 55 to 64	13.08	50.27	32.96	2.48	1.22
	Aged 65 to 74	9.01	46.91	38.53	3.48	2.08
	Aged 75 and over	9.05	45.70	35.77	6.27	3.21
2011–12	Aged 15 to 24	14.98	58.70	23.89	0.95	1.49
	Aged 25 to 34	14.32	59.12	23.77	1.53	1.25
	Aged 35 to 44	12.18	60.83	24.00	1.59	1.40
	Aged 45 to 54	9.32	58.75	28.22	2.55	1.16
	Aged 55 to 64	7.31	54.12	33.85	3.35	1.38
	Aged 65 to 74	5.41	49.00	37.73	5.95	1.91
	Aged 75 and over	5.40	46.21	40.33	5.41	2.64
PULSES						
2006	Aged 16 to 24	3.25	22.55	54.22	13.49	6.49
	Aged 25 to 34	4.53	22.90	53.78	13.30	5.49
	Aged 35 to 44	3.47	24.29	58.27	10.71	3.26
		3.51	23.98	61.26	9.12	2.13

(continued on next page)

Table 3 (*continued*)

	Age range	Daily	3 or more times a week, but not daily	1 or 2 times a week	Less than once a week	Never or almost never
	Aged 45 to 54					
	Aged 55 to 64	4.26	25.78	58.31	9.41	2.23
	Aged 65 to 74	2.70	27.01	59.46	8.11	2.73
	Aged 75 and over	2.05	25.5	57.26	10.87	4.32
2011–12	Aged 16 to 24	1.36	20.64	58.31	12.67	7.02
	Aged 25 to 34	1.90	21.51	55.95	14.92	5.71
	Aged 35 to 44	1.33	23.35	60.42	11.31	3.59
	Aged 45 to 54	1.66	22.79	60.96	11.82	2.77
	Aged 55 to 64	1.36	24.73	61.77	9.80	2.34
	Aged 65 to 74	1.80	25.21	59.82	11.30	1.87
	Aged 75 and over	1.24	26.62	59.12	9.28	3.74
FISH						
2006	Aged 16 to 24	2.02	26.38	50.76	12.50	8.34
	Aged 25 to 34	2.59	31.26	49.14	11.33	5.67
	Aged 35 to 44	2.52	37.29	49.44	7.65	3.09
	Aged 45 to 54	3.97	41.94	47.07	5.17	1.86
	Aged 55 to 64	5.05	48.01	41.44	4.17	1.33
	Aged 65 to 74	5.29	48.72	40.63	4.18	1.18
	Aged 75 and over	4.96	48.39	39.91	4.75	1.98
2011–12	Aged 15 to 24	1.33	25.68	52.32	13.78	6.89
	Aged 25 to 34	1.32	30.27	52.40	11.09	4.92
	Aged 35 to 44	1.93	35.75	50.11	8.56	3.64
	Aged 45 to 54	1.72	39.32	48.58	7.85	2.53
	Aged 55 to 64	3.32	42.55	46.71	6.15	1.27
	Aged 65 to 74	2.69	46.93	43.60	5.20	1.58
	Aged 75 and over	3.15	44.38	45.92	4.75	1.80

Source: ENSE 2006 and ENSE 2011–12. The shaded cells indicate the consumption recommended by the SENC's guidelines.

Table 4
Frequency of consumption of foods before and during the economic crisis (2006, 2011–12) by sex (percentages).

	Sex	Daily	3 or more times a week, but not daily	1 or 2 times a week	Less than once a week	Never or almost never
FRUIT						
2006	MEN	62.73	15.34	11.92	4.43	5.57
	WOMEN	70.78	13.70	9.05	2.70	3.79
2011–2012	MEN	57.92	20.61	12.01	4.18	5.27
	WOMEN	64.83	18.40	9.74	3.26	3.76
VEGETABLES						
2006	MEN	35.46	32.78	23.51	4.95	3.30
	WOMEN	45.67	32.43	16.95	3.00	1.95
2011–2012	MEN	41.19	35.20	16.43	4.42	2.77
	WOMEN	50.24	32.90	12.45	2.84	1.58
MEAT						
2006	MEN	18.71	56.11	22.68	1.57	0.94
	WOMEN	16.07	53.44	26.60	2.30	1.59
2011–2012	MEN	12.07	59.35	25.93	1.77	0.88
	WOMEN	9.07	55.78	30.22	3.13	1.80
PULSES						
2006	MEN	3.69	25.19	57.19	10.46	3.48
	WOMEN	3.42	23.69	57.95	10.74	4.20
	MEN	1.24	24.03	60.44	10.48	3.82
	WOMEN	1.71	22.48	59.92	12.09	3.80
FISH						
2006	MEN	3.04	36.72	48.27	8.14	3.82
	WOMEN	3.77	40.9	45.12	6.78	3.42
	MEN	1.90	35.92	50.04	8.79	3.35
	WOMEN	2.22	38.91	48.11	7.73	3.03

Source: ENSE 2006 and ENSE 2011–12. The shaded cells indicate the consumption recommended by the SENC's guidelines.

meat consumption for men and women (by 6.64% in men and 7% in women) (Table 4).

Regarding the consumption of pulses, the change during the period of economic crisis analysed shows a slight increase in following the recommended frequency (slightly more than 2 percentage points) (Table 4).

The recommended consumption of fish, at a frequency of 3 or more times per week, but not daily, is not the most common norm among Spaniards, although in 2006 it was followed by 38.84% of the population. More women (40.9%) met the target for healthy consumption than men (36.72%) (Table 4).

In the period of economic crisis, 2011–12, the optimal frequency of fish consumption of 3 or more times per week, but not daily, was also not the most common (37.44%) and the frequency of 1 or 2 times per week remained the most common (49.06% of the population). Therefore, the majority of the population did not meet the healthy recommendation for fish consumption (Table 1).

As can be seen in Table 3, the healthy pattern of fish consumption (3 or more times a week, but not daily) was followed by 37.44% of Spaniards and increased steadily with age to 46.93% in the 65–74 age group, where it was the most common frequency of consumption, making this the only age group that mostly met the recommended target for healthy fish consumption. It should also be noted that the recommendation was

followed by more women (38.91%) than men (35.92%).

4.2. The COVID-19 crisis: data from the European Health Survey in Spain 2020) (before and during the pandemic)

Data from the recent EESE 2020 enable us to track people's diets during the pandemic and lockdown in Spain. Data on the frequency of food consumption by age can be found in Table 5 and by sex in Table 6.

With respect to age, there are differences in fruit consumption in both periods, with a high level of those over 65 following recommended guidelines, behaviour that is seen both before and during the pandemic (83.20% and 83.50%, respectively). In all age groups, slightly more people follow the recommended frequencies, with the exception of the youngest group, 15–44, who were least likely to follow the recommendations before the pandemic (57.89%) and whose frequency of daily fruit consumption fell during the pandemic (56.77%).

Thus, overall daily fruit consumption does not seem to have changed during the period of the pandemic (67.81% before and 67.41% during) (Table 2); however, as shown in Table 6, this stability is misleading, as the frequency of men's consumption decreased (from 64.51% before to 62.73% during the pandemic), while women increased their daily fruit consumption (from 70.93% to 71.82%).

Daily consumption of greens, salads, and vegetables is a healthy habit that was followed by 47.58% before the pandemic and by 44.67% during the pandemic, showing a slight fall in the number of those meeting the recommended levels for a healthy diet (Table 2). During the pandemic, the recommendations were followed more by women than by men, but there was a general decrease in the frequency of daily consumption in both sexes, with males showing the greater decline (Table 6).

As can be seen in Table 5, the decline happened across all age groups, with the exception of those over 65, where more people ate vegetables daily, with the proportion rising from 51.87% before the pandemic to 52.84% during. They are, therefore, the age group that best follows this recommendation, as opposed to the youngest (15–44) who followed it less frequently, with 42.42% before and 39.79% during the pandemic.

In the area of meat consumption before and during the pandemic, there was a general improvement among the Spanish population, with a reduction of 8 percentage points in daily consumption, as more people approached the recommended 3 or more times a week, but not daily (Table 5).

There are some qualifications to bear in mind with regard to meat consumption if we take gender into account (Table 6). On the one hand, the proportion of men with the recommended frequency of meat consumption rose more than that of women (from 65.93% to 73.25% for men; from 61.41% to 69.91% for women). On the other hand, men outnumbered women in those with higher consumption frequencies (daily and 3 or more times a week) while women outnumbered men for lower consumption frequencies (once or twice a week, less than once a week, and never).

Daily meat consumption fell in all age groups (Table 5). The health recommendation was followed by all age groups and they maintained their relative positions, the furthest from the guidelines being those over 65 years of age, as 57.08% of this group consumed meat 3 or more times a week before the pandemic, and 64.64% during the pandemic. It should be noted that vegetarians, who eat no meat, were a small group (1.52% of the population before the pandemic and 1.59% during the pandemic), being found particularly among young people and women.

Healthy consumption of pulses is advised to be once or twice a week, and women were more likely to fall into this range than men.

As can be seen in Table 5, the recommended frequency of consumption of pulses is the largest category in all age groups (55.68% of

Table 5
Frequency of consumption of foods by age. Before and during the pandemic (percentages).

	Age	Daily	3 or more times a week, but not daily	1 or 2 times a week	Less than once a week	Never
FRUIT						
Before the pandemic	Aged 15 to 44	57.89	23.58	9.75	5.56	3.22
	Aged 45 to 64	70.29	19.55	6.61	2.44	1.11
	Aged 65 and over	83.20	11.79	3.18	1.13	0.70
During the pandemic	Aged 15 to 44	56.77	28.76	9.45	3.23	1.79
	Aged 45 to 64	70.33	21.33	5.52	1.67	1.14
	Aged 65 and over	83.50	12.94	1.36	1.87	0.32
VEGETABLES						
Before the pandemic	Aged 15 to 44	42.42	42.23	11.03	2.87	1.45
	Aged 45 to 64	51.27	38.86	8.45	1.10	0.31
	Aged 65 and over	51.87	39.15	7.26	1.31	0.41
During the pandemic	Aged 15 to 44	44.67	47.18	6.78	0.95	0.41
	Aged 45 to 64	39.79	49.14	9.03	1.43	0.61
	Aged 65 and over	52.84	47.60	5.90	0.74	0.26
MEAT						
Before the pandemic	Aged 15 to 44	12.80	66.44	17.97	0.98	1.81
	Aged 45 to 64	8.51	64.29	23.86	1.91	1.43
	Aged 65 and over	5.15	57.08	33.48	3.22	1.08
During the pandemic	Aged 15 to 44	8.88	75.01	12.82	0.85	2.44
	Aged 45 to 64	6.07	71.62	19.96	1.35	1.00
	Aged 65 and over	1.83	64.64	29.72	2.94	0.87
PULSES						
Before the pandemic	Aged 15 to 44	1.07	32.8	55.55	8.71	1.87
	Aged 45 to 64	1.16	34.37	56.63	7.02	0.83
	Aged 65 and over	1.07	36.94	54.47	6.72	0.80
During the pandemic	Aged 15 to 44	0.46	28.98	62.56	7.06	0.93
	Aged 45 to 64	0.58	33.67	60.55	4.78	0.43
	Aged 65 and over	0.41	37.46	57.21	4.68	0.24
FISH						
Before the pandemic	Aged 15 to 44	1.01	32.5	51.37	11.20	3.92
	Aged 45 to 64	0.95	39.53	50.25	7.66	1.60
	Aged 65 and over	0.96	49.97	42.29	5.94	0.84
During the pandemic	Aged 15 to 44	0.56	37.02	49.93	8.56	3.92
	Aged 45 to 64	0.58	44.61	47.98	5.85	0.98
	Aged 65 and over	0.23	55.68	39.75	2.58	1.76

Source: EESE, 2020. The shaded cells indicate the consumption recommended by the SENC's guidelines.

Table 6
Frequency of consumption of foods before and during the pandemic, by sex (percentages).

	Sex	Daily	3 or more times a week, but not daily	1 or 2 times a week	Less than once a week	Never
FRUIT						
Before the pandemic	Men	64.51	21.28	8.13	3.86	2.21
	Women	70.93	17.93	6.32	3.15	1.67
During the pandemic	Men	62.76	26.00	7.32	2.54	1.37
	Women	71.82	19.51	5.31	2.25	1.11
VEGETABLES						
Before the pandemic	Men	42.38	42.86	11.18	2.51	1.07
	Women	52.5	38.04	7.52	1.35	0.59
During the pandemic	Hombres	38.2	50.98	9.11	1.20	0.52
	Women	50.80	43.59	4.58	0.72	0.31
MEAT						
Before the pandemic	Men	10.58	65.93	21.33	1.19	0.97
	Women	8.70	61.41	25.48	2.38	2.03
During the pandemic	Men	7.06	73.25	17.56	1.05	1.09
	Women	5.66	69.91	20.45	1.90	2.08
PULSES						
Before the pandemic	Men	1.36	35.00	54.65	7.73	1.26
	Women	0.85	33.58	56.66	7.64	1.28
During the pandemic	Men	0.49	35.78	58.25	4.88	0.60
	Women	0.49	29.38	62.96	6.56	0.61
FISH						
Before the pandemic	Men	1.08	36.23	50.93	9.40	2.36
	Women	0.88	41.27	47.09	8.25	2.50
During the pandemic	Men	0.30	41.26	49.76	7.01	1.67
	Women	0.68	46.20	44.37	5.62	3.14

Source: EESE 2020. The shaded cells indicate the consumption recommended by the SENC's guidelines.

the population before the pandemic), with little difference in age before the pandemic (55.55% for those aged 15–44 and 54.47% for those over 65). However, it was the youngest age group that showed the largest rise during the pandemic in terms of pulse consumption, going from 55.55% to 62.56%, and making this the age group with that followed the guidelines most commonly during the COVID crisis.

Finally, the data on fish consumption show that the majority of people eat fish less often than the recommended level of 3 or more times a week, but not daily. However, a certain improvement was observed during the pandemic, with 38.82% of the population falling into the recommended category before the pandemic and 43.8% during the pandemic (Table 2). In both periods more women than men kept to the recommended level, by some 5 per cent (Table 6). It is also worth noting that the age group that most generally followed the guidelines was people over 65 (with 49.97% before and 55.68 during).

5. Discussion

The first result of interest from the data given here is that the structure and the frequency of consumption of the basic foods of the Mediterranean Diet did not break down: people did not stop eating the foods that characterize the Spanish pattern of eating and most consumption frequencies were similar in all the periods studied. It is worth considering the reasons for this stability, as levels remained largely unaffected by either an economic crisis or a pandemic health situation that forced people to stay at home. A significant factor must be the solidity of the Spanish food culture, which includes eating patterns that are widespread among the population and which, judging from the way they are followed, are used as a reference point for change when circumstances alter. It should be added, however, that the starting point is a pattern of consumption that is not entirely healthy, in particular because, in all the periods studied, less fish and less fruit are consumed than would be desirable according to expert recommendations.

The economic crisis affected fruit consumption in particular and fish consumption slightly, worsening the diet, as there was a decline in the optimal consumption patterns of these foods. The effects of the COVID crisis have been accompanied by a general improvement in the dietary pattern with respect to meat, pulses, and fish, although there has been a decline in the consumption of vegetables. As in the Spanish studies on food and the pandemic that were reviewed at the beginning of this article, as well as in many of those from the rest of Europe, it is clear that the general diet quality during this period has improved more than it has declined.

Although there details regarding meat consumption that need qualifying (as outlined below), in both crises, it was women who more usually followed the frequencies associated with a healthy diet. Further, it was the older age groups that came closest to following the guidelines. These social groups (women and older people) were, of course, precisely the two that started from a better situation. It could be said, therefore, that the economic crisis and the COVID crisis led to a more significant improvement for the people who were already eating well. This leads us to think that the cultural background of the groups with a more developed food culture, women and the elderly, are those who have more experience with regard to culinary activity (Díaz Méndez et al., 2013) and who show greater resilience in the face of the vicissitudes of the crisis, as well as taking greater care over their food in difficult times.

These data invite a consideration of food culture (informal education), as opposed to educational level (formal education), as an explanatory factor for food consumption. While it is true that it is common to find a relationship between a high level of education and a dietary intake that is closer to the recommended guidelines—especially in the consumption of fruit and vegetables (Díaz-Méndez and García-Espejo, 2019)—the data on consumption frequencies explored here suggest that perhaps culinary knowledge, which is neither acquired nor measured through formal training but through informal learning, may provide a better explanation than formal education of why women and older people are the ones who follow the recommendations more frequently and take more care of their diet.

Age and sex are variables that show important differences in following a healthy diet, with similar results in both crises, and the data indicate that young people (compared with the other age groups) and men (compared with women) are those who are less likely to follow dietary recommendations. Their diet quality declined more than that of the other groups, in both the economic crisis and the pandemic, although it should be noted that the latter period saw more young people moving towards the healthy frequency of eating pulses, the only type of food for which this age group improved. This fact leads us to consider a factor that emerges from the European studies on nutrition during the

pandemic that we reviewed: the increase in active cooking (Fiszman et al., 2020; Gaspar et al., 2020; Sinisterra-Loaiza et al., 2020). The greater time available, whether due to enforced unemployment as a consequence of economic crisis or lockdown following COVID, allowed for more time to be dedicated to cooking. However, unemployment associated with economic crises (Gutiérrez and Díaz-Méndez, 2015), time pressures linked to work and fewer culinary skills, especially among men (Díaz-Méndez and García-Espejo, 2020), mean that younger people are a vulnerable group when it comes to healthy eating, because they lack time, traditional knowledge, and kitchen skills. Although this hypothesis needs to be confirmed when more data is available, it is possible that young people are the group that needs more attention in the promotion of healthy diets.

Another notable aspect of the two crises is that, both in the pandemic and the economic crisis, the home became the main or only food environment for daily food intake. In economic crises, it is cheaper to eat at home than to eat out, something that does not happen so regularly in all countries, but does in Spain (Díaz-Méndez and Callejo, 2014). And during the pandemic lockdown, the closure of restaurants eliminated eating out as a habit available to Spanish people (Díaz de Rada and Díaz-Méndez, 2021). The household became the centre where food needs were met and where action could be taken to adapt to the crises. Cooking more, according to the studies, was a common response in France, Italy, and Spain (Rodgers et al. 2021; Bracale and Vaccaro, 2020; Gaspar et al., 2020). There is no precise information on the relationship between cooking at home more often and an improvement in diet, but it is clear that this is a strategy that, whether voluntary or imposed, has been used to cope with times of crisis. Some researchers have associated more involvement in cooking activities with a rise in dietary calories (Dondi et al., 2021; Marty et al. 2021), but others have associated it with weight control and health (Glabska et al., 2020; Snuggs and McGregor, 2021). This raises the question of who is responsible for taking care of food in the home. In Spain, cooking for others is recognized as an essentially female task (Díaz-Méndez and Garcia Espejo, 2020). The results presented here show that during the crises, economic and mobility restrictions were successfully faced, making it possible to continue dietary patterns; it also seems that those responsible for cooking, women, have been main contributors to improving people's diet, putting a brake on the deterioration of food and eating habits. Cooking more seems to have been one of the keys to improved nutrition during the pandemic, and it cannot be ruled out that it may also have been one of the keys to saving money during the economic crisis.

The case of meat-eating deserves special attention, as the proportion of those following consumption recommendations improved the diet in both the economic crisis and the pandemic, but the patterns are contrary to those for other foods analysed. Men (as opposed to women) and young people (as opposed to older people) are the groups who follow the recommended frequencies more often. The improvement is partly due to a reduction in daily meat consumption, but there has also been an increase in the frequency of those eating meat up to 3 times a week. In other words, although it would be necessary to clarify this with more precise data, meat consumption increased during the crises to come closer to the recommendations.

Women and the older population have chosen to reduce meat consumption during the crises, gravitating to a frequency of once or twice a week. It is necessary to consider some hypothesis in this respect, at least to understand why it differs from the other dynamics of change. It is significant that it is the groups that generally follow the recommendations most closely (women and older people) that have reduced meat consumption, which is what has been suggested in recent studies about the need to adopt healthy and sustainable diets to reduce the impact of food production systems on the environment (Willett et al., 2019).

6. Limitations

We should point out the limitations of this study. The lack of data available in the sources consulted at the close of this survey and the differences in the age bands used to categorize the population have made it necessary to carry out an analysis of a descriptive nature and also to focus exclusively on the variables of age and sex, which do not reflect the totality of what is happening. The study carried out here is justified by the situation of emergency that people in Spain have experienced as a result of the pandemic, requiring a general diagnosis prior to any other analysis. This examination, analysing dietary change during the pandemic, offers preliminary results, which nevertheless allow us to put forward hypotheses, in some cases tentative, but opening up questions to help focus future studies of this area when more information is available.

7. Conclusions and future work

The activities of eating and cooking, which are usually very much integrated into the rhythms of daily life, have altered in times of crisis, resulting in greater attention to food—especially during the COVID-19 crisis—and an improvement in the proportion of the population following expert recommendations for eating healthily. Everything appears to indicate that when people are forced to reflect on their diet, it improves or at least does not worsen dramatically; this also suggests that the constraints of everyday life before the crisis set up a set of dynamics in which food took a secondary place, with all that this implied in terms of health.

The structure of the diet's pattern and the frequency of food consumption in Spain during the periods of crisis under study show that people did not stop eating the foods that characterize the Spanish dietary pattern. However, it is observed that the economic crisis affected the consumption of fruit particularly and the consumption of fish slightly, leading to a decrease in the optimal consumption patterns for these foods. The effects of the COVID crisis have been accompanied by a general improvement in the dietary pattern for meat, pulses, and fish, although there has been a decline in the consumption of vegetables.

In both crises, it was women and older age groups who followed a healthy diet best. These groups started from a better situation than the rest in the pre-crisis period. It could be said that they have been the most resilient to the vicissitudes of the crises, and they are also the most careful with their diet.

Age and gender are variables that show important differences when it comes to following a healthy diet, with similar results emerging in both crises. The data indicate that young people and men are the least likely to follow dietary recommendations. It should therefore be noted that young people are the group most in need of attention when it comes to promoting healthy diets.

This work also shows that, during periods of crisis, the home is the dominant environment for food intake. Eating at home is the strategy that has been used to cope with times of crisis, either because of needing to save money, due to the economic crisis, or because of the lack of mobility, during the pandemic. In this way, cooking more at home enabled continuity of eating patterns and it can be seen as one of the keys to improving diets during the pandemic, while reducing food expenditure during the economic crisis.

The evidence available points to the importance of food culture in following a healthy diet. This culture functions by providing guidelines, norms, patterns of action, and modes of behaviour which, judging from the data provided, are well capable of dealing with the uncertainty and instability caused by crises. It can be assumed, therefore, that if Spanish society did not have such an ingrained food culture oriented towards eating choices, a decline in health would be more evident.

Both the results offered in this study and the hypotheses put forward for future exploration open up possibilities for experts to guide the population more clearly towards healthy eating in an environment of drastic change, such as that generated by COVID-19. It is not only a matter of insisting on the foods that make up a healthy diet or providing guidance on the frequency of their consumption, but also of adapting the

recommendations to new vulnerable groups, such as young people, of considering the importance of cooking and not just eating, and of highlighting the importance of women in improving the entire population's diet. The sociology of food faces many questions about food during the pandemic, which will be answered as new data becomes available.

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8. CRediT authorship contribution statement

The authors have contributed equally to the development of the paper.

9. Implicatin for gastronomy

The results of this work allow us to know where the culturally strongest groups are located. This is key to developing initiatives that promote the national gastronomic culture.

Crises do not imply drastic changes in the diet's general but young people appear as the social group with the worst follow-up of healthy eating. The lack of food culture of this group is important for the future of national food culture.

The economic crisis and the health crisis have led to an improvement in feeding in social groups that already had a diet healthy: women and older people. They are the social groups with a greater knowledge of the local food culture. Women and older people are the most appropriate groups to spread gastronomic knowledge to the rest of the population.

Data availability

The data that has been used is confidential.

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