



Fifty years of beverages consumption trends in Spanish households

Paula Rodríguez Alonso¹, Susana del Pozo de la Calle¹, Teresa Valero Gaspar¹, Emma Ruiz Moreno¹, José Manuel Ávila Torres¹ and Gregorio Varela Moreiras^{1,2}

¹Fundación Española de la Nutrición (FEN). Madrid, Spain. ²Universidad CEU San Pablo. Madrid, Spain

Abstract

Objectives: To describe the evolution of non-alcoholic and alcoholic beverages consumption in the Spanish households from the 60's to nowadays.

Methods: This study is based on beverages and food consumption in Spanish households; the data sample consisted of consumption and distribution data, obtained from the Household Budget Survey (HBS) since 1964 to 1991 and from the Food Consumption Survey (FCS) since 2000 to 2014, in collaboration with the Spanish Nutrition Foundation (FEN).

Results: In 2014 the average consumption of non-alcoholic beverages was 332 g/person/day, whereas alcoholic beverages consumption represented 72.6 g/person/day. Consumption of non-alcoholic beverages has increased 721% (1964: 46 g/person/day; 1991: 96 g/person/day; 2000: 240 g/person/day and 2014: 332 g/person/day), whereas alcoholic beverages consumption has decreased roughly a 50% (1964: 145 g/person/day; 1991: 113 g/person/day; 2000: 78.4 g/person/day and 2014: 72.6 g/person/day).

The most consumed alcoholic beverage in 2014 was beer (41.3 g/day), followed by wine (23.0 g/day). Regarding non-alcoholic beverages, the most consumed was water (144 g/day), followed by cola (ordinary: 30.7 g/day and diet: 20.5 g/day).

According to Spanish regions, in 2014 non-alcoholic beverages were the most consumed in the islands (Balearic Islands 521 grams/person/day; Canary Islands 515 grams/person/day), as it was in the nineties (Balearic Islands 148 grams/person/day and Canary Islands 281 grams/person/day). However in 1980-81 the largest consumption of alcoholic beverages was that of Galicia, 408 g/person per day, and the lower in the Canary Islands, 63 g/person per day. In 2014, Murcia and Andalucía represented the regions with the highest consumption of alcoholic beverages.

In 2014, alcoholic beverages provided roughly 1.89% of the total energy and 1.47% of sugars, whereas non-alcoholic beverages provided 3.28% of energy and 15.72% of sugars and, in 2000, alcoholic beverages contributed 2.29% of the energy and 1.47% of sugars and non-alcoholic drinks provided 3.76% of the energy and 22.7% of sugars.

Conclusion: There have been significant changes in the eating patterns at the Spanish homes, especially regarding beverages consumption, over the last five decades. In general, a higher consumption and variety for non-alcoholic drinks has occurred, especially in the islands. In parallel, a decline in alcoholic beverages consumption has been clearly observed.

Key words: Non-alcoholic beverages. Alcoholic beverages. Nutrition survey. Dietary habits.

INTRODUCTION

Many factors affect population health. Some of them, such as age, sex or race, cannot be modified, but others, like food

consumption, can be changed. The population nutritional status depends on the nutritional value of the diet, which varies according to food set; through an appropriate mix, we obtain a healthy diet. Eating habits are the result of a conscious behaviour, mainly collective and always repetitive, which leads to choosing, preparing and consuming a certain menu or food as additional part of their social, cultural and religious habits, and which is influenced by multiple factors (socio-economic, cultural, geographical, etc.). There is a continuous need for updating food and beverage consumption habits, dietary patterns and trends in Spain (1).

In Europe, national and regional lifestyle practices, including dietary habits, have been changing over the past 50 years. Spain has undergone a dramatic social and socioeconomic change since the 1960s, including a massive rural-urban migration and a rapid urbanization process (2).

A rapidly increasing number of people use catering services, restaurants and vending machines, both during weekdays and leisure time, which is also a key factor in understanding changes in diet (1). In addition, there has been a rapid increase the immigrant population, which now represents about 10% of the total population(3). In addition, the economic crisis has been a factor generating a new lifestyle (4).

These changes in dietary patterns and lifestyle appear to have had negative consequences for both, present and future populations, as overweight and/or obesity affect > 50% of the adult population and 25% of the infant/young population (5).

One the main objectives of the Spanish Nutrition Foundation (FEN) is to study, understand and improve the nutrition of the Spanish population, therefore, it has been working jointly with the National Institute of Statistics (INE) and lately with the Spanish Ministry of Agriculture, Food and Environment (MAGRAMA) in the Food Consumption Survey (FCS). This information is also essential in order to obtain information about nutritional parameters and diet quality which allows the identification of dietary patterns from the Spanish population.

The purposes of the present study are to analyze the evolution of beverages intake in Spanish households, according to

Correspondence:

Paula Rodríguez Alonso. Fundación Española de la Nutrición (FEN). c/ General Álvarez de Castro, 20, 1ª planta. 28010 Madrid, Spain
e-mail: prodriguez@fen.org.es

the Household Budget Survey (HBS) and the Food Consumption Survey (FCS), from 1964 to 2014, in the context of the whole diet, as well as to evaluate alcoholic and non-alcoholic beverages intake, stratified by regions, and their contribution to total energy intake.

METHODS

The data sample is about shopping and product entrance into the home obtained from the Household Budget Survey (HBS) since 1964 to 1991 and from the Food Consumption Survey (FCS) from 2000 to 2014.

In both cases, the sample was the whole household and a two-stage sampling method was carried out (1964-2014). The sample size of the HBS was 24,000 randomly selected households and that of the PCA was 12,000 households representative of the Spanish habitat population. The differences between both surveys are listed in table I (6).

A “household” is considered as the person or group of people who occupy a family house together or part of it, and consume foods/beverages and other goods bought from the same budget. Products’ data were registered by a scanner the same day the products were acquired, for seven consecutive days. Data from the households have also been considered according to geographical areas. The location of the study was Spain inland plus the Balearic and Canary Islands.

The purchase data obtained in both surveys have been transformed into energy and nutrients. Two different programs were used for that purpose: RSIGMA program, which includes DIETECA base data, for the HBS, and VD-FEN 2.1 program for the PCA. Both programs include the same food Spanish composition tables (7), containing over 600 foods and beverages, distributed

in 15 groups. The use of two different tools for converting databases was due to the evolution in time of computer systems.

In order to calculate the average of energy and nutrients intake, quantities were transformed to grams per person per day. The data were also compared to the most updated *Recommended Nutrient Intakes* for the Spanish population to evaluate the adequacy of the diet (7,8).

RESULTS

Analysis of food consumption data per capita availability based on the food surveys by the National Statistics Institute, over the period of 1964 to 1991, and the Ministry of Agriculture, Food and Environment over 2000 and 2014, allows estimation of the “average menu” in Spain and the associated distribution of the different food groups as shown in figure 1.

Therefore, as shown, in 2014 the average consumption of non-alcoholic beverages at home was 332 g/person/day, whereas alcoholic beverages consumption was 72.6 g/person/day. Non-alcoholic drinks consumption has increased gradually a 621% from 1964 to 2014, whereas alcoholic beverages consumption has decreased roughly a 50% (Table II).

As already stated, the consumption of non-alcoholic beverages has largely increased; in 2014 the most consumed drink was bottled water (144 grams/person/day) followed by regular cola (30.7 grams/person/day) and diet cola (20.5 grams/person/day) as shown in table III. The consumption of soft drinks without calories has been steadily increasing in the last years. As for alcoholic drinks, the most consumed was beer (41.3 grams/person/day) followed by wine (23 grams/person/day) (Table IV). Alcoholic beverages consumption has undergone a slow decline during recent years. Within this group, wine, as a beverage traditionally included

Table I. Household Budget Survey (HBS) and Food Consumption Panel (FCS) characteristics

	Food Consumption Panel	The Household Budget Survey
Start	1987	1939
Frequency	Annual	Quarterly
Population scope	Households, hotel industry/restoration and institutions	Family homes, commercial areas and establishments (excluding institutions)
Geographic scope	Inland Spain and Islands (Balearic and Canary)	National territory
Sample size	12,000 households	24,000 households
Criteria breakdown	Geographic areas and autonomous Household socioeconomic status Habitat size Family size Age and activity of responsible for purchasing Presence of children	Autonomous Community Province Size of the municipality Household composition Household income level Educational level of the main breadwinner Quarter survey, etc.
Number of foods	130 food staples disaggregated in 416 inputs (quantified by weight)	187 foods 66 (quantified by weight)

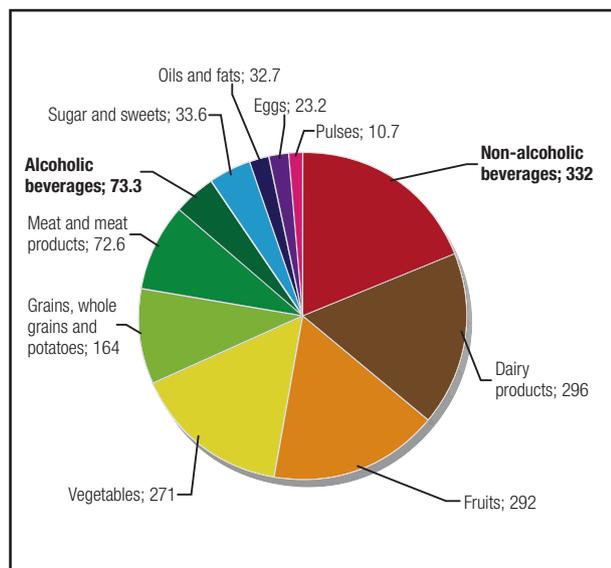


Figure 1. Distribution of the different food and beverages groups at Spanish households in 2014 (g/person per day).

Table II. Evolution of beverages consumption at homes in Spain: years 1964-2014 (g/person per day)

	Year	Alcoholic beverages	Non-alcoholic beverages
	Mean (2000-2014)	75 ± 3.6	298 ± 31.4
PCA	2014	72.6	332
	2013	73.1	326
	2012	81	316
	2011	70.2	328
	2010	68.9	330
	2009	70	338
	2008	77.2	305
	2007	76.1	297
	2006	76.6	291
	2005	75.3	283
	2004	77.4	283
	2003	79	276
	2002	76.3	262
	2001	76.6	256
2000	78.4	240	
EPF	1991	113	96
	1981	170	98
	1964	145	46

Table III. Availability of non-alcoholic beverages in 2014 (g/person day)

Non-alcoholic beverages	Quantity purchased
Bottled water	144
Regular cola	30.7
Diet cola	20.5
Other soft drinks	18.7
Soft drinks, orange	15.8
Nectars	12.3
Beverages juice + milk	10.7
Sodas	9.8
Soft drinks, lemon	8.6
Alcohol-free beer	8.4
Soft drinks, isotonic	7.2
Diet cola without caffeine	5.3
Concentrated others juice	4.3
Soft drinks tea/coffee	4.0
Fruit juice refrigerated/exp	3.7
Juices and nectars rest	2.4
Cola without caffeine	2.4
Concentrated peach juice and mixtures	2.3
Soft drinks, tonic	2.2
Concentrated orange juice and mixtures	1.8
Coffee beans or ground, mix	1.5
Coffee beans or ground, natural	1.4
Concentrated pineapple juice and mixtures	1.1
Coffee beans or ground, decaffeinated	0.7
Soluble coffee	0.7
Infusions	0.3
Vegetable juices	0.3

in the Mediterranean diet concept for the adult population, only represented a 31% of the total alcoholic beverages consumption in 2014, whereas it accounted for 62% of the total consumption in 1991. In the last few years, a gradual substitution of wine for beer has occurred, the latter representing almost 56% of the total alcoholic beverage consumption nowadays.

BEVERAGES CONSUMPTION BY THE AUTONOMOUS COMMUNITIES IN SPAIN

According to the Spanish regions, in 2014 non-alcoholic beverages were the most consumed in the islands (Balearics Islands 521 grams/person/day; Canary Islands 515 grams/person/day),

as it was in the nineties (Balearics Islands 148 grams/person/day and Canary Islands 281 grams/person/day).

Table V shows the data from purchases by regions in 1980-81 and 2014, and allows studying how the trends look like in our country.

Table IV. Availability of alcoholic beverages in 2014 (g/person day)

Alcoholic beverages	Quantity purchased
Beer	41.3
Wine	23
Other drinks with wine	3.6
Sparkling wines, champagne and cava	1,5
Cider	0.8
Other spirituous beverages	0.8
Brandy	0.4
Whiskey	0.4
Gin	0.4
Rum	0.3
Anise	0.2

Table V. Availability of beverages 1880-2014 (g/person day)

Spanish regions	Alcoholic beverages		Non-alcoholic beverages	
	2014	1980-81	2014	1980-81
Andalucía	79.3	123	345	105
Aragón	66.1	149	309	133
Asturias	55	166	272	118
Balears	83	144	521	148
Canarias	61.2	63	515	281
Cantabria	50.5	214	282	122
Castilla-La Mancha	65.5	168	310	148
Castilla y León	52.2	181	284	103
Cataluña	83.9	167	400	191
Extremadura	67.6	90	333	68.5
Galicia	52.7	408	245	132
La Rioja	54.8	221	255	119
Madrid	73.8	144	236	130
Murcia	94.3	237	343	100
Navarra	60.7	210	229	112
País Vasco	70.9	171	208	120
Valencia	75.3	145	380	141

The largest differences regarding availability of a food group between regions, in 1980-81, was observed in the group of alcoholic beverages, the largest purchases were made in Galicia, with 408 g/person per day, and the lowest in the Canary Islands, with 63 g/person per day. In 2014, Murcia and Andalucía were the regions with the highest consumption of alcoholic beverages.

ENERGY AND NUTRIENT INTAKE

Changes in eating and drinking patterns are reflected in energy and nutrient content of the diet in the last 50 years (Table VI). The mean energy intake for the Spanish population in 2014 was 2,219 kcal/person/day, which was much lower than in 1964 (3,008 kcal/person/day), a difference of 789 kcal/day.

In relation to macronutrients, major changes are shown in carbohydrates: in 1964, people consumed approximately 200 grams more than in 2014; lipids (1964: 108 g/person per day vs 2014: 103 g/person per day) and proteins (1964: 87 g/person per day vs 2014: 78.2 g/person per day) had, however, much lower variations in 50 years evolution. In 2014 fiber, consumption (16.6 g/day) was insufficient compared with the recommended amounts (25-30 g/day) while in 1964 the recommendations (27.5 g/day) were met. Finally, sugar consumption has increased 11 grams per day in just 14 years (2000-2014).

Energy contribution to total energy intake from non-alcoholic beverages was 4% in 2000-2006 and decreased 1% in 2014. Due to the increased consumption of sugar-free drinks, the percentage contribution of sugar from non-alcoholic beverages has decreased lately, representing in 2014 15.72% (Table VII).

DISCUSSION

Spanish society has undergone numerous changes in the second half of the twentieth century such as economic development, industrialization and a decrease in family members. We have changed from an almost universal family model to the coexistence of different types of families, so there is now a greater diversity of ways of living (9). Any pattern, however, seems to maintain the principle of "variety", even though the marked changes observed during the 1964-1980 period.

This change has been translated in lower consumption of certain food groups and significant increase of non-alcoholic beverages, being the main target of the present study.

Comparing the present results with those of other related countries, an increase in consumption of some food groups is also observed in other European countries as recorded by the European Nutrition and Health Report based on the balance sheets of FAO (10). Therefore, the Mediterranean countries have significantly reduced the consumption of some foods characteristics of the traditional Mediterranean diet, such as cereals, bread, potatoes, vegetables, olive oil and wine. Conversely, the consumption of meats, especially poultry, and dairy fats has increased significantly. In short, the diet is no longer predominantly vegetarian. From a nutritional point of view, this trend has resulted in an enrichment

Table VI. Evolution of energy intake, macronutrients and fiber in households

	Energy Kcal/day	Protein g/day	Lipids g/day	Carbohydrates g/day	Starch g/day	Sugar g/day	Fiber g/day
2014	2,219	78.2	103	228	128	100	16.6
2010	2,162	78.8	104	219	125	94.1	17.2
2005	2,065	76.1	90.9	225	134	90.8	15.7
2000	2,096	75.9	92	229	140	89.0	15.6
1991	2,634	93.5	121	294			20.6
1981	2,914	98	131	333			21.9
1964	3,008	87	108	423			27.5

Table VII. Energy and Sugar contribution from alcoholic and non-alcoholic beverages (%)

	Alcoholic beverages		Non-alcoholic beverages	
	<i>Energy</i>	<i>Sugars</i>	<i>Energy</i>	<i>Sugars</i>
2000	2.29%	1.47%	3.76%	22.68%
2006	2.04%	1.46%	4.17%	22.75%
2014	1.89%	1.56%	3.28%	15.72%

of dietary fat, saturated fat and cholesterol, salt and sugar at the expense of carbohydrates. That is, the current diet of Mediterranean countries is increasingly moving away from the pattern of prudent and healthy diet that it once represented (11, 12). Comparing our results with other European and Spanish studies, we can observe that the main differences are due to the methodology used in each study (11, 13, 14).

All these changes have led to a deviation of the traditional Mediterranean diet in Spain, despite being a major producer and exporter of typical Mediterranean products (15).

The present study, conducted at national level, updates beverages and food habits and nutritional aspects of the Spanish population. In addition, trends emerging from other surveys mentioned above were considered.

Spanish beverages pattern, and consequently diet trends, may be still considered as varied and healthy, although some trends need to be corrected. More education and information of the large beverages market offered in Spain and their nutritional characterization is urgently needed.

ENERGY AND NUTRIENTS

These variations in the diet have been linked, however, to reduced energy consumption, from 3,008 kcal/person per day

in 1964 to 2,219 kcal/person per day in 2014. It is a very sharp drop, which has not been attached to obesity rates, as they are currently much higher, according to the National Health Survey in Spain: obesity has increased from 7.4% to 17.0% over the past 25 years (16), mainly indicating that obesity rates cannot be only related with energy consumption by population but needs to be considered as a multifactorial complex condition and disease. This decrease in the availability of energy can be explained by the decrease of carbohydrates intake, almost a 200 grams difference in the past 50 years. This led to a lower contribution of fiber intake (1964: 27.5 g/person per day; 2014: 10.9 g/person per day) which clearly indicates that the diet nowadays should include greater variety of foods such as whole grains, legumes, fruits and vegetables.

Regarding the contribution to energy intake from beverages, we can see that it has gradually declined since 2000. Similar results and trends were obtained on the ANIBES study (17).

In conclusion, in the last decades, there have been significant changes in drink intake patterns, with a remarkable increase of non-alcoholic beverage consumption, especially in some Spanish regions where a decline of alcoholic beverages consumption was also observed. The Spanish population diet has notably changed in the last 50 years, differing somehow from the traditional Mediterranean diet. This change resembles the one observed in other European countries (15). Regarding the intake of energy and nutrients, the results show a decrease in energy intake per person. It is necessary to design strategies that encourage a healthy diet allowing the recovery and maintenance of the traditional characteristics of the Mediterranean diet.

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REFERENCES

1. Varela Moreiras G, Ávila J, Cuadrado C, Del Pozo S, Ruiz E, Moreiras O. Valoración de la dieta española de acuerdo al Panel de Consumo Alimentario. Ministerio de Medio Ambiente y Medio Rural y Marino. Fundación Española de la Nutrición (eds.); 2008.
2. Varela-Moreiras G, Alguacil Merino LF, Alonso Aperte E, Aranceta Bartrina J, Avila Torres JM, Aznar Lain S, et al. Consensus document and conclusions - Obesity and sedentarism in the 21st century: What can be done and what must be done? *Nutr Hosp* 2013;28(Suppl. 5):1-12.
3. Varela Moreiras G, Ávila J, Cuadrado C, del Pozo S, Ruiz E, Moreiras O. Hábitos alimentarios y estado nutricional de la población inmigrante en España. Ministerio de Medio Ambiente y Medio Rural y Marino/Fundación Española de la Nutrición (eds.); 2009.
4. Varela Moreiras G, Serrano Iglesias M, Alonso Aperte E, García González A, Achón y Tuñón M. Alimentación y sociedad en la España del siglo XXI. Fundación MAPFRE 2015.
5. Pérez Miguelsanz MJ, Cabrera Parra W, Varela Moreiras G, Garaulet M. Regional distribution of the body fat: use of image techniques as tools for nutritional diagnosis. *Nutr Hosp* 2010;25(2):207-23.
6. De la Calle, Susana del Pozo, Moreno ER, Gaspar TV, Alonso PR, Torres JMÁ. Sources of information on food consumption in Spain and Europe. *Nutrición Hospitalaria* 2015;31(Supl. 3):29-37.
7. Moreiras O, Carbajal Á, Cabrera L, Cuadrado C. Tablas de composición de alimentos. Guía de prácticas. 16a ed. 2013.
8. Tetens I. Panel on Dietetic Products, Nutrition and Allergies (NDA): Scientific opinion on dietary references values for energy, European Food Safety Authority. EFSA 2013.
9. Del Campo S, Del Mar Rodríguez-Brioso M. La gran transformación de la familia española durante la segunda mitad del siglo XX. *Reis* 2002;103-65.
10. Elmadfa I, Meyer A, Nowak V, Hasenegger V, Putz P, Verstraeten R, et al. European Nutrition and Health Report 2009, National report-Portugal. 2009.
11. DAFNE. The DAta Food NEtworking (DAFNE) project European food availability databank based on household budget surveys. Accessed on February 6th 2016. Available at: <http://www.nut.uoa.gr/Dafnesoftware/>
12. Alonso Aperte E. Patrones en la dieta actual en el mundo mediterráneo. Accessed on February 6th 2016 Available at: http://www.infoalimentacion.com/documentos/patrones_dieta_actual_mundo_mediterraneo.asp
13. Agencia Española de Seguridad Alimentaria y Nutrición (AESAN). Encuesta Nacional de Ingesta Dietética Española, 2011. Accessed on February 6th 2016. Available at: <http://www.msssi.gob.es/novedades/docs/PresentacionENIDE010311.pdf>
14. Guelinckx I, Ferreira-Pêgo C, Moreno LA, Kavouras SA, Gandy J, Martínez H, et al. Intake of water and different beverages in adults across 13 countries. *Eur J Nutr* 2015;54(2):45-55.
15. Varela-Moreiras G, Ruiz E, Valero T, Ávila JM, Del Pozo S. The Spanish diet: An update. *Nutr Hosp* 2013;28(Suppl. 5):S13-S20.
16. Ministerio de Sanidad, Servicios Sociales e Igualdad. Encuesta Nacional de Salud de España 2011/12. Accessed on February 6th 2016. Available at: <http://www.msssi.gob.es/estadEstudios/estadisticas/encuestaNacional/encuesta2011.htm>
17. Ruiz E, Ávila JM, Valero T, Del Pozo S, Rodríguez P, Aranceta-Bartrina J, et al. Energy intake, profile, and dietary sources in the Spanish population: Findings of the ANIBES study. *Nutrients* 2015;7(6):4739-62.