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ORIGINALES

Habits, preferences and culinary skills of first-year students at the university of Huelva

Hábitos, preferencias y habilidades culinarias de estudiantes de primer curso de la universidad de Huelva

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ABSTRACT:

Introduction: Students attending university are at a critical period for the development and consolidation of future lifestyles. The objective of this study was to know the eating habits, food preferences and culinary skills of first-year students on different degree courses at the University of Huelva.

Material and Method: Cross-sectional descriptive study in academic year 2015-2016 of a sample of 756 students. Adherence to the Mediterranean Diet was measured by the KIDMED questionnaire. The rest of the variables were measured by an ad hoc questionnaire. Data analysis was performed using the PSPP programme, calculating arithmetic means, standard deviations and percentages for the descriptive analysis, with Chi-square test and ANOVA for the relational analysis.

Results: 20.4% of students have an optimal level of adherence to the Mediterranean Diet, compared to 65.3% % with an average level and 14.3% with low adherence. Favourite foods cited were chicken (62.2%), pasta (58.2%), pork (50.4%) and chips (45.9%). The types of food the students knew how to prepare included pasta (93.8%), egg and chips (90.2%), precooked pizza (88.7%), fruit juices (86.1%) and grilled meat (85.8%).

Conclusions: Huelva university students diet is very similar to that of other university populations studied. We found a preference for meat and foods rich in carbohydrates, to the detriment of fruit and vegetables. A lack of culinary skills was observed, which could explain the deterioration in eating habits; this is a pointer to future interventions.

Key words: Cross-sectional study, Diet Mediterranean, Nutrition Assessment, Cooking skills, Food preferences, University students.

RESUMEN:
Introducción: Los estudiantes universitarios se encuentran en un periodo crítico para el desarrollo y consolidación de estilos de vida futuros. El objetivo fue conocer los hábitos alimentarios, preferencias alimentarias y habilidades culinarias del alumnado de primer curso de las distintas titulaciones de la Universidad de Huelva.
Material y Método: Estudio descriptivo transversal durante el año académico 2015-2016 de una muestra final de 756 alumnos. La adherencia a la Dieta Mediterránea se ha medido a través del cuestionario KIDMED. El resto de variables se han recogido mediante un cuestionario ad hoc. El análisis de datos se realizó mediante el PSPP, calculándose medias, desviaciones típicas y porcentajes para el análisis descriptivo, prueba de Chi-cuadrado y ANOVA para el análisis relacional.
Resultados: El 20,4% del alumnado tiene un nivel óptimo de adherencia a la Dieta Mediterránea, frente al 65,3% que posee un nivel medio y un 14,3% bajo. Los alimentos preferidos son pollo (62,2%), pasta (58,2%), cerdo (50,4%) y las patatas fritas (45,9%). Entre los alimentos que saben preparar están la pasta, (93,8%), patatas con huevo (90.2 %), pizza precocinada (88.7 %), zumo (86.1 %) y carne a la plancha (85.8 %).
Conclusiones: La dieta de los estudiantes onubenses es muy similar a la de otras poblaciones universitarias estudiadas. Se encontró preferencia por las carnes y alimentos ricos en glúcidos, en detrimento de la fruta y la verdura. Se observó un déficit en las habilidades culinarias, lo cual podría explicar el deterioro del patrón alimentario de éstos y orientar futuras intervenciones.

Palabras Claves: Estudio transversal, Dieta Mediterránea, Evaluación Nutricional, Habilidades Culinarias, Preferencias Alimentarias, Estudiantes Universitarios.

INTRODUCTION

The Mediterranean diet, considered by UNESCO as belonging to the world's Intangible Cultural Heritage, provides sufficient energy and nutrition to protect the human organism from important illnesses as well as enhancing life expectancy [1-3]
In recent decades, eating patterns in Mediterranean countries have become more Westernized, with particular effect on the young [1,4].

The period of transition from adolescence to adulthood is characterized by the increased risk of acquiring unhealthy habits such as poor diet and sedentary lifestyles [1,2, 6-8].

Students attending university can experience a deterioration in their lifestyles, giving rise to the potential consolidation of risky behaviours which, if not controlled, could increase the chances of morbidity-mortality later in life [3-6].

Factors associated to students turning away from the Mediterranean diet are: their newly acquired sense of independence, responsibility for taking care of themselves, the greater availability of pre-cooked food and fast food restaurants, lack of nutritional knowledge and experience in cooking, or a question of taste and preference [2-7].

There are innumerable studies on the extent of student adherence to the Mediterranean diet, which conclude that they tend to follow a narrow, low-calorie diet. Students do not eat enough meals a day and take them at irregular times; they are more likely to snack between meals and skip breakfast mainly due to lack of time or to not feeling hungry first thing in the morning, and when they do, it tends to be insufficient [1-7, 9,10]. It is important to go beyond this and examine the roots of the problem in order to develop intervention strategies. As is known, university is a strategic target for promoting healthy lifestyles [8], which is the aim of the Spanish Network of Healthy Universities (REUS in Spanish) which unites institutions committed to this end by leading and supporting processes to bring about social change [9].

The aim of this work is to know the dietary habits, preferences and cooking skills of first-year students attending the University of Huelva, in order to carry out effective interventions to improve their culinary competence.

MATERIAL AND METHOD

Design and sample

This is a descriptive transversal study performed in academic year 2015-2016. The study population consisted of 2,330 students in their first year at the University of Huelva. A random group sampling was made, and stratified according to the university's nine faculties. The information was extracted from the university's academic management service database. A final sample of 756 students was obtained with ±3% error and 95.5% NC.

Variables and data gathering

The information gathered on different aspects of student eating habits included:

- Adherence to the Mediterranean diet.
- Meal distribution throughout the day.
- Frequency of meals.
- Factors that influence eating habits.
- Self-assessment of diet.
- Self-assessment of level of food education.
- Food preferences.
- Skills in food preparation.

Data on adherence to the Mediterranean diet was gathered from responses to the KIDMED questionnaire [11]. The information on the other variables was collected by ad hoc questionnaire that was tested by experts and piloted in a group of 15 university students who had already completed their first year. Assessment of the influence of factors on eating habits was measured on a 0-5 Likert scale. Socio-demographic data on age, gender, civil status, degree course undertaken and type of residence during the course were also taken.

The data were gathered in the second four-month period of the 2015-2016 academic year, following a process in which information was facilitated by faculty heads and permission sought from teaching staff for the students to complete the questionnaire; informed consent was received from the students for their voluntary participation in the study, and they were given a guarantee of confidentiality.

Data analysis

Data analysis was organized and processed using the PSPP software statistical package, which calculated means, standard deviations and percentages for the descriptive analysis; the chi-squared test and ANOVA were used for the relational analysis.

RESULTS

The sample consisted of 62.7% women (474) and 37.3% men (282), with an average age of 20.95 ± 4.090 (age range: 17–56).

For civil status, 92.6% were single and 4.5% married, 2.1% described themselves as common-law partners, and 0.8% were DR/DK. Data on type of residence and faculty attended are shown in Table 1.

Table 1: Sample distribution for the Faculty and Type of Residence variables during the academic year

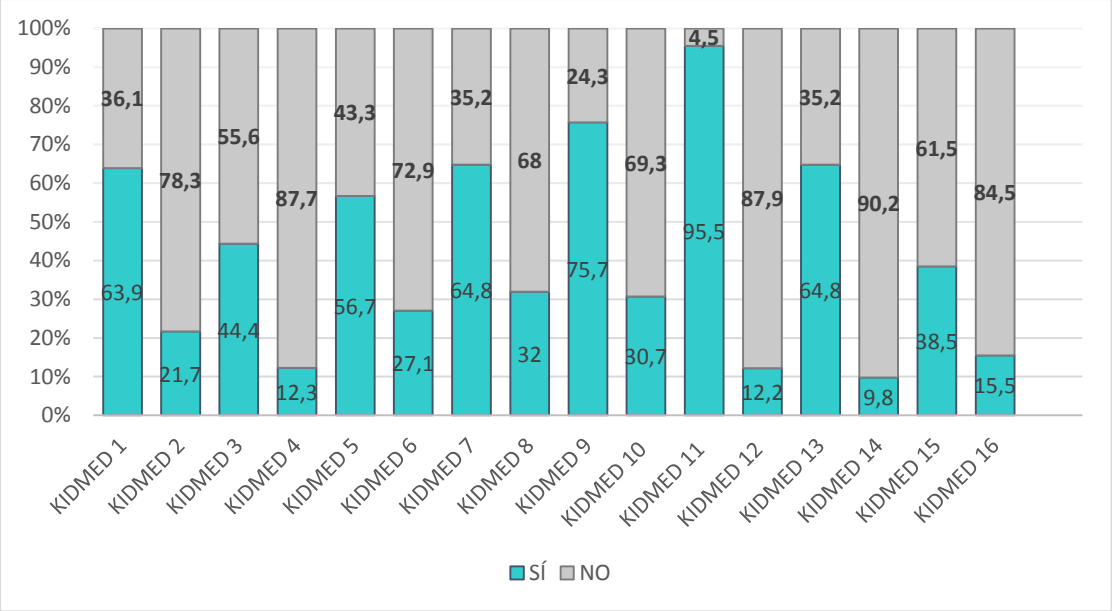
	FREQUENCY	PERCENTAGE
UNIVERSITY FACULTY ATTENDED		
Nursing	113	14.9
Education	236	31.2
Experimental Sciences	48	6.3
Humanities	59	7.8
Work Sciences	104	17.7
E.T.S.I.	65	8.6
Law	3	0.4
Business	128	16.9
TYPE OF RESIDENCE		
Own home	31	4.1
Living at home with parents	358	47.4
Shared flat	337	44.6
Halls of Residence	22	2.9
Other	7	0.9

Adherence to the Mediterranean diet

According to the KIDMED test, only 20.4% of students stuck closely to the Mediterranean diet, against 79.6% whose adherence was middling and 14.3% whose adherence was low.

In relation to each item in the KIDMED test, the most positive aspects were: the use of olive oil in cooking (95.5%), non-consumption of factory-baked foods for breakfast (90.2%), students who breakfasted (87.9%), students who did not snack on sweets and/or cakes several times a day (84.5%) students who ate cereals or derivatives for breakfast (75.7%). On the downside, the least healthy responses in the survey were: consumption of fruit or cooked vegetables more than once day (12.3%), students who consumed two pieces of fruit a day (25.7%), those who ate pasta or rice almost daily (32%) and consumed two yoghurts and/or 40 grams of cheese a day (38%) (Figure 1). The scoring in the KIDMED test showed significant differences for the variables of age ($p<0.000$), civil status ($p<0.01$), type of residence during the academic year ($p<0.001$) and self-assessment of food intake ($p<0.000$) (Table 2).

Figure 1: Distribution of responses for KIDMED test items



(*YES / NO)*

Table 2. Distribution of total KIDMED test scores for the socio-demographic variables

VARIABLES		**KIDMED SCORES**			**Significance Test**	
		N	Mean	SD	Freq.	Sig.
Gender	Women	472	5.6	2.0	1.7	0.159
	Men	281	5.9	2.3		
Age	17-24	661	5.64	2.1	6.4	0.000
	25-34	52	6.23	1.9		
	35-44	10	6.8	1.7		
	45-56	4	9.5	0.5		
Civil Status	Single	701	5.6	2.1	3.32	0.010
	Married	34	6.9	2.1		
	Common-law partner	16	6.2	2.2		
	Separated	1	3			
	Widowed	2	6			
Faculty	Nursing	142	5.8	2.3	1.34	0.209
	Education Sciences	156	5.8	2		
	Experimental Sciences	48	5.9	2.1		
	Humanities	59	5.8	2.4		
	Work Sciences	40	5.4	2		
	E.T.S.I.	65	6	2.4		
	Law	3	5	2.6		
	Social Work	114	5.2	2		
	Business	128	6	2		
Type of residence in academic year	Living at home with parents	358	5.9	2.1	4.52	0.001
	Own home	31	6.8	2.3		
	Halls of	22	5.3	1.8		

	Residence					
	Shared flat	337	5.5	2.1		
	Other	6	4.8	2.9		
Self-assessment of food intake	I must maintain my current diet as I consider it to be healthy	170	7.2	2	114.5	0.000

Distribution of meals throughout the day

The results for distribution of meals throughout the day appear in Figure 2. One relevant finding is that 70.4% of students stated that they always made themselves breakfast, 58.3% consumed the five recommended meals a day and 57.6% admitted to snacking between meals. There were no significant differences between the socio-demographic variables and the type of meals consumed during the day.

Figure 2: Distribution of meals throughout the day

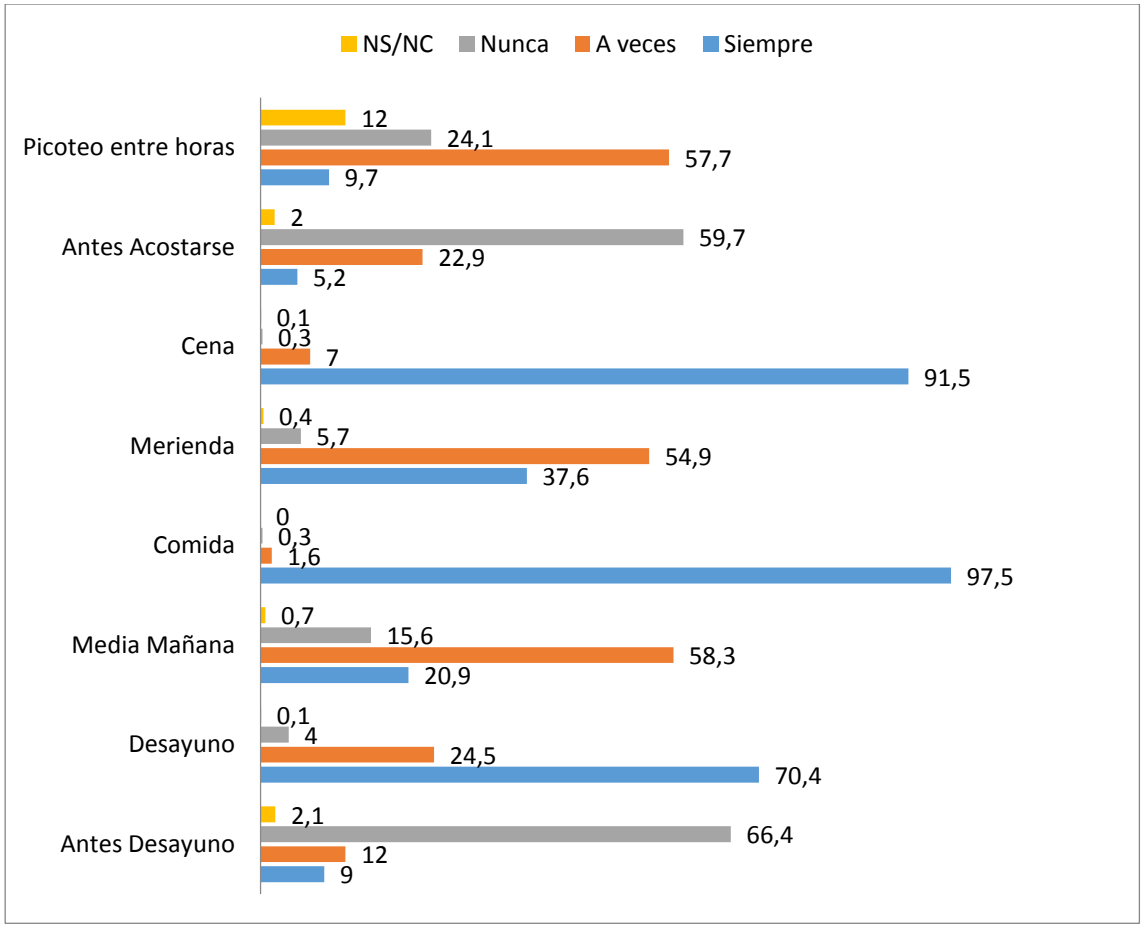


FIGURE 2: DR/DK, never, sometimes, always
Snacking between meals, before bedtime, dinner, teatime, lunch, mid-morning, breakfast, before breakfast

Frequency of meal taking

Table 3 presents the absolute and relative frequency of consumption of each food item in the survey. The food products consumed various times a day were water (93.9%), olive oil (33.9%), dairy products (33.2%) and cereals (31.9%).

On a daily basis, only 39.8% of respondents stated that they consumed dairy products, 39.4% cereals, 33.7% olive oil and 32.7% fruit.

About half the sample declared that several times a week they consumed red meat (50.3%), eggs (46%), legumes (41.7%), cold meats (34.3%), blue fish (32.1%) and white fish (31.2%). Only 36.1% of students consumed legumes once a week. An interesting finding was that 37.7% of students did not drink coffee.

Table 3: Frequency of consumption of food items in the survey

	Several times a day	Once a day	Several times a week	Once a week	Several times a month	Once a month	Less frequently	Never	DR/DK
Cereals: bread, rice, pasta…	241 (31.9%)	298 (39.4%)	150 (19.8%)	40 (5.3%)	17 (2.2%)	-	2 (0.3%)	2 (0.3%)	1 (0.1%)
Factory-baked foods: chocolate, snacks, cakes…	20 (2.6%)	72 (9.5%)	190 (25.1%)	204 (27%)	119 (15.7%)	52 (6.7%)	71 (9.4%)	24	-
Legumes: chickpeas, beans, lentils…	10 (1.3%)	56 (7.4%)	315 (41.7%)	273 (36.1%)	51 (6.7%)	17 (2.2%)	16 (2.1%)	16 (2.1%)	-
Coffee	68 (9.2%)	110 (14.6%)	83 (11%)	43 (5.7%)	44 (5.8%)	25 (3.3%)	72 (9.5%)	285 (37.7%)	2 (0.3%)
Dried fruit and nuts	14 (1.9%)	40 (5.3%)	131 (17.3%)	129 (17.1%)	157 (20.8%)	68 (9%)	157 (20.8%)	53 (7%)	2 (0.3%)
Eggs	12 (1.6%)	29 (3.8%)	348 (46%)	245 (32.4%)	68 (9%)	21 (2.8%)	16 (2.1%)	9 (1.2%)	1 (0.1%)
Olive oil	256 (33.9)%	255 (33.7%)	184 (24.3%)	19 (2.5%)	10 (1.3%)	2 (0.3%)	9 (1.2%)	4 (0.5%)	12 (1.6%)
Sunflower oil	15 (2%)	50 (6.6%)	139 (18.4%)	87 (11.5%)	65 (8.6%)	44 (5.8%)	112 (14.8%)	166 (22%)	48 (6.3%)
Fruit	141 (18.7%)	247 (32.7%)	163 (21.6%)	83 (11%)	39 (5.2%)	18 (2.4%)	39 (5.2%)	17 (2.2%)	-
Vegetables in general, green vegetables	76 (10.1%)	146 (11.3%)	259 (34.3%)	113 (14.9%)	53 (7%)	25 (3.3%)	36 (4.8%)	40 (5.3%)	2 (0.3%)
Dairy products: milk, yoghurts, cheese…	251 (33.2%)	301 (39.8%)	143 (18.9%)	32 (4.2%)	14 (1.9%)	4 (0.5%)	6 (0.8%)	2 (0.3%)	-
Red meat: beef, pork...	13 (1.7%)	60 (7.9%)	380 (50.3%)	204 (27%)	48 (6.3%)	19 (2.5%)	15 (2%)	13 (1.7%)	1 (0.1%)
Cold meats: mortadella, spicy pork sausage, ham, salami…	21 (2.8%)	102 (13.5%)	259 (34.3%)	173 (22.9%)	89 (11.8%)	30 (4%)	45 (6%)	32 (4.2%)	-
White fish: hake, whiting…	7 (9%)	21 (2.8%)	236 (31.2%)	269 (35.6%)	103 (13.6%)	31 (4.1%)	45 (6%)	36 (4.6%)	2 (0.3%)
Blue fish: sardine, tuna, anchovy…	6 (0.8%)	32 (4.2%)	243 (32.1%)	225 (29.8%)	127 (16.8%)	40 (5.3%)	46 (6.1%)	30 (4%)	2 (0.3%)
Shellfish	2 (0.3%)	37 (4.9%)	71 (9.4%)	121 (16%)	133 (17.6%)	230 (30.4%)	147 (19.4%)	3 (0.4%)	-
Convenience food	11 (1.5%)	41 (5.4%)	92 (12.2%)	113 (14.9%)	108 (14.3%)	79 (10.4%)	166 (22%)	102 (13.5%)	22 (2.9%)
Fruit juice in cartons	83 (11%)	143 (18.9%)	167 (22.1%)	88 (11.6%)	59 (7.8%)	27 (3.6%)	92 (12.2%)	84 (11.1%)	4 (0.5%)
Water	709 (93.8%)	33 (4.4%)	8 (1.1%)	1 (0.1%)	1 (0.1%)	1 (0.1%)	1 (0.1%)	1 (0.1%)	1 (0.1%)

Soft drinks	78 (10.3%)	89 (11.8%)	130 (17.2%)	183 (24.2%)	78 (10.3%)	40 (5.3%)	94 (12.4%)	57 (7.5%)	2 (0.3%)

Factors that influence eating habits

The results for the factors that influence eating habits show that a lack of experience in cooking healthy food (1.69 ± 1.6), lack of knowledge of the repercussions of a poor diet (1.77 ± 1.6) and the ease of not cooking (2.2 ± 1.7) all have a moderate effect. Whereas lack of time due to study commitments (2.5 ± 1.6) and the pleasure gained from eating what they like (3.4 ± 1.42) significantly influence students' eating habits.

Students' self-assessment of their diet

In the students' self-assessment of their dietary intake, 63.8% (479) believed that they needed to improve their eating habits, 22.6% (170) said they were happy with their current diet as they considered it to be healthy, and 13.6% (102) admitted a radical change was needed in their food consumption.

Information on food and nutrition

Regarding information on food and nutrition, 48.2% (634) stated that they needed to know more, 40.9% (309) believed they were well informed and 9.7% (73) thought their knowledge on the subject was lacking; 1.2% (9) were DR/DK.

Favourite foods

In terms of food preferences (Table 4), we observe that food favourites included: chicken (62.2%), pasta (58.2%), pork (50.4%) and fried potato chips 45.9%). Least favourite choices were: tinned sardines (40.7 %), beans (35.3 %), green beans (34.6 %), fresh sardines (28.2 %) and tinned mackerel (27.4 %).

The preference variable for foods showed hardly any variation for gender, but there were significant differences in women's predilection for lettuce ($p<0.001$), tomato ($p<0.002$) and pastries ($p<0.001$) over men. The men were less liable to be turned off by beans ($p<0.02$), white bread ($p<0.05$), fresh sardines ($p<0.001$) tinned sardines ($p<0.000$), beef ($p<0.000$) and pork ($p<0.000$) (Table 4).

Table 4: Distribution of food preferences by gender

	NONE		LITTLE		A LOT		QUITE A LOT		Significance test.		
	Women	Men	Women	Men	Women	Men	Women	Men			
	Fr. (%)	Fr. (%)	Fr. (%)	Fr. (%)	Fr. (%)	Fr. (%)	Fr. (%)	Fr. (%)	ValorX^2	gl	p.
ORANGES	30 6.4	12 4.4%	101 21.6%	58 21.2%	210 45%	140 51.1%	126 27%	64 23.4%	3.547	3	0.315
PEARS	45 9.5%	21 7.5%	163 34.5%	84 30.1%	172 36.4%	123 44.1%	92 19.5%	51 18.3%	4.593	3	0.204
APPLES	27 5.7%	15 5.4%	139 29.4%	75 27%	193 40.9%	128 46%	113 23.9%	60 21.6%	1.915	3	0.590
BANANAS	46 9.8%	22 7.9%	75 16%	32 11.5%	168 35.7%	119 42.8%	181 38.5%	105 37.8%	5.384	3	0.146
LETTUCE	48 10.2%	43 15.5%	56 11.9%	54 19.4%	173 36.8%	97 34.9%	193 41.1%	84 30.2%	16.392	3	**0.001**
TOMATOES	88 18.8%	42 15.1%	65 13.9%	68 24.4%	146 31.3%	87 31.2%	168 36%	82 29.4%	14.405	3	**0.002**
CARROTS	96 20.4%	59 21.3%	170 36.2%	112 40.4%	121 25.7%	65 23.5%	83 17.7%	41 14.8%	2.124	3	0.547
GREEN	169	90	126	95	117	65	59	27	5.246	3	0.155

BEANS	35.9%	32.5%	26.8%	34.3%	24.8%	23.5%	12.5%	9.7%			
BOILED POTATOES	43 9.1	24 8.6%	112 23.8%	66 23.6%	197 41.8%	128 45.7%	119 25.3%	62 22.1%	1.388	3	0.708
FRIED POTATO CHIPS	16 3.4%	13 4.7%	71 15.1%	26 9.3%	176 37.4%	103 36.9%	207 44%	137 49.1%	6.230	3	0.101
SAVOURY PASTRIES	40 8.6%	25 9.1%	119 25.5%	83 30.2%	182 39%	103 37.5%	126 27%	64 23.3%	2.492	3	0.477
LENTILS	60 12.7%	36 12.9%	137 29%	71 25.4%	157 33.3%	105 37.5%	118 25%	68 24.3%	1.800	3	0.615
CHICK PEAS	82 17.4%	42 15.1%	130 27.7%	78 28%	168 35.7%	103 36.9%	90 19.1%	56 20.1%	0.754	3	0.860
BEANS	185 39.4%	78 28.3%	121 25.8%	83 30.1%	98 20.9%	71 25.7%	65 13.9%	44 15.9%	9.617	3	**0.022**
WHITE BREAD	15 3.2%	6 2.2%	66 14%	26 9.4%	201 42.7%	144 52%	189 40.1%	101 36.5%	7.562	3	**0.056**
WHOLE-WHEAT BREAD	76 16.3%	46 16.5%	141 30.3%	80 28.8%	140 30.1%	95 34.2%	108 23.2%	57 20.5%	1.634	3	0.652
PRECOOK-ED DISHES	46 9.8%	30 10.8%	141 30.1%	79 28.4%	193 41.2%	111 39.9%	89 19%	58 20.9%	0.706	3	0.872
PASTRIES	16 3.4%	23 8.2%	108 23%	86 30.8%	219 46.6%	104 37.3%	127 27%	66 23.7%	16.331	3	**0.001**
SLICED BREAD	38 8.1%	23 8.3%	163 34.8%	107 38.6%	202 43.1%	107 38.6%	66 14.1%	40 14.4%	1.577	3	0.665
PIZZA	22 4.7%	12 4.3%	91 19.3%	56 20.1%	200 42.5%	114 41%	158 33.5%	96 34.5%	0.247	3	0.970
RICE	8 1.7%	6 2.2%	61 12.9%	25 9%	201 42.4%	126 45.3%	204 43%	121 43.5%	2.864	3	0.413
PASTA	7 1.5%	6 2.2%	23 4.9%	13 4.7%	162 34.3%	102 36.8%	280 59.3%	156 56.3%	1.061	3	0.786
SWEETS	40 8.5%	27 9.7%	94 19.9%	65 23.4%	172 36.4%	99 35.6%	166 35.2%	87 31.3%	2.103	3	0.551
DOUGH-NUTS	48 10.2%	23 8.2%	113 24%	75 26.9%	168 35.7%	109 39.1%	142 30.1%	72 25.8%	2.992	3	0.393
CHOCO-LATE FILLED ROLLS	82 17.5%	47 17.2%	157 33.5%	84 30.7%	118 25.2%	85 31%	112 23.9%	58 21.2%	3.166	3	0.367
FRESH MACKEREL	119 25.1%	51 18.4%	96 20.3%	53 19.1%	131 27.6%	88 31.8%	128 27%	85 30.7%	5.430	3	0.143
TINNED MACKEREL	131 28%	73 26.4%	122 26.1%	75 27.2%	137 29.3%	76 27.5%	78 16.7%	52 18.8%	0.883	3	0.829
FRESH SARDINES	153 32.6%	58 20.8%	92 19.6%	54 19.4%	98 20.9%	88 31.5%	127 27%	79 28.3%	16.769	3	**0.001**
TINNED SARDINES	216 46.2%	88 31.5%	132 28.2%	83 29.7%	71 15.2%	75 26.9%	49 10.5%	33 11.8%	21.875	3	**0.000**
FRESH TUNA	65 13.8%	36 13%	70 14.8%	45 16.2%	163 34.5%	99 35.7%	174 36.9%	97 35%	0.542	3	0.909
TINNED TUNA	36 7.6%	36 12.9%	58 12.3%	37 13.3%	196 41.6%	113 40.5%	181 38.4%	93 33.3%	6.471	3	0.091
SOLE	79 16.8%	52 19%	83 17.7%	59 21.5%	118 25.2%	76 27.7%	189 40.3%	87 31.8%	5.619	3	0.132
CHICKEN	8 1.7%	6 2.2%	17 3.6%	12 4.3%	162 34.2%	79 28.4%	286 60.5%	181 65.1%	2.904	3	0.407
BEEF	47 9.9%	12 4.3%	99 20.9%	20 7.2%	154 32.5%	99 35.5%	174 36.7%	148 53%	39.409	3	**0.000**
PORK	28 6%	7 2.5%	75 16%	16 5.8%	150 32%	94 33.9%	216 46.1%	160 57.8%	24.235	3	**0.000**

Eating habits

The students surveyed stated that their skills at preparing and cooking food extended to the following: pasta (93.8%), egg and chips (90.2 %), pre-cooked pizza (88.7 %), fruit juice (86.1%), grilled meat (85.8 %), salads (83.8 %), grilled fish (76.7%), potato omelette (74.8 %), fried fish (68.9%), scrambled eggs (64.9%) and chicken with rice (53.83%).

The students recognized that some common meals were beyond their culinary capabilities: *gazpacho* (cold tomato soup) (48.9%), rice with added ingredients

(46.1%), baked fish (44%), sponge cake (43.2%), homemade pizza (41%), *salmorejo* (thick cold tomato soup) (40.5%), meat in tomato sauce (36.2%), ratatouille (28.4%), mixed vegetables (28.3%), meat stew (24.7%), lentils (24%), any type of rice (23.9%), French toast (23.1%), meat and vegetable stew (22.6 %), paella (18.9 %), beans (14.2 %), *cocido (*traditional Spanish stew) (13.8 %) tuna fish stew (10.6%).

The percentage of women who declared that they knew how to cook a variety of dishes was higher than for the men for all cooked meals, with a significant gender difference across most types of meals (Table 5). The distribution of cooking skills according to type of residence tended strongly towards those who lived in their own home and were fully independent. Table 5 shows that students who live in a hall of residence or in a shared flat had more cooking skills than those living at home with their parents, the differences being significant in only five dishes: chicken with rice (p<0.01), *cocido* (p<0.000), scrambled eggs (p<0.01), meat in tomato sauce (p<0.0000) and ratatouille (p<0.015).

Table 5: Distribution by gender and type of residence related to the variable of skills in preparing and/or cooking certain dishes

DISH	GENDER		Signif. Test.	TYPE OF RESIDENCE					Signif. Test.
	Women	Men		LH	OH	HR	SF	O	
	YES	YES		YES	YES	YES	YES	YES	
	Fr (%)	Fr (%)	X^2 (sig.)	Fr (%)	Fr (%)	Fr (%)	Fr (%)	Fr (%)	X^2 (sig.)
FRUIT JUICES	417 88.3%	226 82.2%	5.512 (0.19)	306 86.7%	27 90%	17 77.3%	286 85.6%	6 85.7%	1.972 (0.741)
POTATO OMELETTE	371 78.6%	188 68.4%	**9.671** **(0.002)**	255 72.2%	26 86.7%	17 77.3%	255 76.3%	5 71.4%	4.008 (0.405)
SALADS	419 88.8%	207 75.3%	**23.324** **(0.000)**	288 81.6%	28 93.3%	18 81.8%	284 85%	7 100%	5.066 (0.281)
MACARONI	455 96.4%	246 89.5%	**14.498** **(0.000)**	325 92.1%	27 90%	21 95.5%	321 96.1%	6 85.7%	6.547 (0.162)
CHICKEN & RICE	246 52.1%	152 55.3%	0.694 (0.405)	166 47%	21 70%	13 59.1%	192 57.5%	5 71.4%	12.511 (0.14)
RICE WITH ADDED INGREDIENTS	249 52.8%	95 34.7%	**22.813** **(0.000)**	149 42.2%	12 40%	10 45.5%	169 50.8%	3 42.9%	5.531 (0.237)
PAELLA	96 20.3%	45 16.4%	1.734 (0.188)	50 14.2%	11 36.7%	4 18.2%	72 21.6%	3 42.9%	**15.644** **(0.004)**
ANY TYPE OF RICE	121 25.6%	57 20.8%	3.875 (0.144)	67 19%	14 46.7%	2 9.1%	94 28.2%	0 0%	**22.604** **(0.004)**
MEAT STEW	122 25.8%	62 22.6%	0.967 (0.325)	79 22.4%	15 50%	5 22.7%	82 24.6%	3 42.9%	12.635 (0.13)
FISH STEW	49 10.4%	30 10.9%	0.059 (0.808)	34 9.6%	10 33.3%	2 9.1%	32 9.6%	1 14.3%	**17.202** **(0.002)**
LENTILS	129 27.3%	50 18.2%	**7.841** **(0.005)**	75 21.2%	15 50%	8 36.4%	81 24.3%	0 0%	**16.646** **(0.002)**
COCIDO	68 14.4%	35 12.8%	0.388 (0.533)	40 11.3%	12 40%	5 22.7%	45 13.5%	0 0%	**21.875** **(0.000)**
BEANS	76 16.1%	30 10.9%	3.776 (0.52)	41 11.6%	11 36.7%	4 18.2%	50 15%	0 0%	**15.965** **(0.003)**
EGG & CHIPS	437 92.6%	236 86.1%	**8.178** **(0.004)**	312 88.4%	25 83.3%	19 86.4%	310 93.1%	7 100%	7.270 (0.122)
SCRAMBLED EGGS	333 70.6%	151.555.1 %	**18.141** **(0.000)**	206 58.4%	22 73.3%	15 68.2%	235 70.6%	5 71.4%	12.494 (0.14)
MEAT & VEG STEW	123 26.1%	45 16.4%	**9.315** **(0.002)**	77 21.8%	16 53.3%	5 22.7%	68 20.5%	1 14.3%	**17.527** **(0.002)**
GAZPACHO	254 53.8%	111 40.5%	**12.277** **(0.000)**	167 47.3%	21 70%	9 40.9%	161 48.3%	6 85.7%	**10.102** **(0.039)**
SALMOREJO	206 43.6%	96 35%	**5.331** **(0.021)**	140 39.7%	20 66.7%	7 31.8%	130 39%	5 71.4%	**12.385** **(0.015)**
SPONGE CAKE	243 51.5%	79 28.8%	**36.256** **(0.000)**	141 39.9%	15 50%	8 36.4%	154 46.2%	4 57.1%	4.323 (0.364)
FRENCH TOAST	130 27.5%	42 15.3%	**14.578** **(0.000)**	75 21.2%	13 43.3%	3 13.6%	80 24%	1 14.3%	**9.175** **(0.057)**
SPAGHETTI	445 94.3%	233 85%	**17.879** **(0.000)**	313 88.7%	26 86.7%	19 86.4%	313 94%	6 85.7%	7.383 (0.117)

BAKED FISH	231 48.9%	97 35.4%	**12.899** **(0.000)**	135 38.2%	19 63.3%	10 45.5%	159 47.7%	4 57.1%	**11.709** **(0.020)**
PIZZA	435 92.2%	227 82.8%	**15.052** **(0.000)**	318 90.1%	25 83.3%	21 95.5%	291 87.4%	7 100%	**4.034** **(0.401)**
GRILLED FISH	386 81.8%	186 67.9%	**18.719** **(0.000)**	248 70.3%	28 93.3%	16 72.7%	273 82%	6 85.7%	**18.528** **(0.001)**
FRIED FISH	351 74.4%	163 59.5%	**17.903** **(0.000)**	223 63.2%	24 80%	15 68.2%	246 73.9%	6 85.7%	**11.919** **(0.018)**
GRILLED MEAT	414 87.7%	226 82.5%	**3.890** **(0.049)**	289 81.9%	28 93.3%	18 81.8%	297 89.2%	7 100%	**10.440** **(0.034)**
HOMEMADE PIZZA	198 41.9%	108 39.4%	0.460 (0.498)	147 41.6%	13 43.3%	11 50%	131 39.3%	3 42.9%	1.254 (0.869)
MIXED VEGETABLES	150 31.8%	61 22.3%	**7.741** **(0.005)**	86 24.4%	13 43.3%	6 27.3%	103 30.9%	3 42.9%	7.913 (0.095)
MEAT IN TOMATO SAUCE	171 36.2%	99 36.1%	0.001 (0.979)	98 27.8%	17 56.7%	10 45.5%	143 42.9%	1 14.3%	**25.176** **(0.000)**
RATATOUILLE	151 32%	61 22.3%	**8.066** **(0.005)**	80 22.7%	13 43.3%	8 36.4%	108 32.4%	2 28.6%	**12.371** **(0.015)**

LH: Living at Home with Parents; OH: Own House; HR: Hall of Residence; SF: Shared Flat; O: Other

DISCUSSION

The extent of adherence to the Mediterranean diet among the first-year students surveyed at the University of Huelva is very similar to that of other students whose eating habits have been studied [1-7, 10, 13]. However, it should be stated that our study population was formed only of new students who had only recently arrived at university, as opposed to other studies that analysed students beyond the first year of their degree courses; thus the possible negative effects recorded in the literature [1-4, 6,13] would not yet be obvious.

Monitoring the eating habits of this student population throughout the entirety of their degree courses will demonstrate this influence. One strength of our study is that it covers students across all faculties at the University of Huelva without focusing on a particular degree course group, as well as including student eating preferences and culinary habits, factors that have received less attention in other descriptive investigations. Our research has similar limitations to studies that seek to assess student food intake.

The results of this study show that Huelva University students have deficient eating habits that need to change and draw closer to the typical healthy Mediterranean diet. Most students' scores were in the middle segment of the KIDMED questionnaire, with the stand-out feature being the proportion of students who scored high on adherence to the Mediterranean diet and the small percentage of those who scored low. The results are similar to those in other studies of university students and their eating habits [12]. The eating habits that stand out most among students in Huelva relates to taking the time to have breakfast, in contrast to results from studies in Murcia and Ourense [1,3] in which this meal was skipped more frequently; another point to emphasise is the high use of olive oil in cooking. A negative point is the low daily consumption of fruit and vegetables among Huelva students, an important aspect that needs to be reversed in future intervention strategies.

In our study, a clear determining factor was age, although civil status and type of residence also had an effect. It was observed that students who are married and have their own homes, which indicates students of mature age, had higher mean scores than the rest. It could be that greater independence in their daily lives, maturity, experience and a heightened sense of responsibility for taking care of themselves, together with greater concern about their future health and awareness or knowledge of

the impact on their health of bad eating habits, as well as traditional family eating habits that depend less on the consumption of precooked foods, could all be reasons that explain the main differences between younger and older students. In terms of gender, as in other research [12,13] no significant differences were noted. However, we did find discrepancies in the effect of type of residence. Students who scored highest in our survey were those who lived in their own home, followed by those who lived at home with their parents, whereas other studies have shown that students scoring highest were those who reside away from home [1]. Maybe the fact that the students in our survey were still in the first year could explain the difference.

Regarding the distribution of meals throughout the day, three points in particular need to be improved in any future process to promote healthy eating. The first refers to the high number of students who systematically skip breakfast, although this is not necessarily every single day. Secondly, reducing food intake to just three meals a day, although most students stated that they occasionally have five. The third point is the high number of students who snack between meals, often unplanned and unhealthily. In terms of the frequency of consumption of certain types of food, the results show a clear daily deficit in fruit and vegetables, and a high weekly intake of red meat and sugary and/or refined food, and low consumption of dried fruit and nuts. These results are only comparable to those of Chacón et al. [12], with similar low consumption of fruit, vegetables in general, green vegetables and dried fruit and nuts, together with high consumption of meat, factory baked foods, cakes, snacks and fizzy drinks.

Another important result is the relation established in students' self-assessment of their eating habits and the KIDMED test scores. The students with the lowest scores were those who considered their eating habits to be the poorest, indicating that they were aware that they do not eat well. This awareness of the need to eat better does not necessarily mean that all students demand information on nutrition, which suggests that future research should focus not only on improving nutritional knowledge but also on how to inculcate healthy eating practices.

There is a similarity between the factors that influence Huelva students' eating habits and those of students in other research [2-7]. Factors exercising the biggest influence are food preferences and elements related to the organization of academic work, followed by the more moderate effect of lack of experience in cooking healthy food, the ease of not cooking and lack of awareness of the negative effects of bad diet on health. These data fit those found in students' self-assessment of their own eating habits, with the awareness that their eating habits need to improve, somewhat or substantially.

On food preferences, there are more studies that analyse the influence of food preferences on making eating decisions [14] than research that explores students preferred choices. Our study found a high percentage of students who preferred meat and carbohydrate-rich foods to fruit and vegetables, as in similar study populations[2, 6,13,15].

The scientific literature has little to say on culinary skills but more on students' self-perception of their own cooking capabilities and the factors that influence them [16-19]. Our study adopts a new approach in that it describes students' favourite foods and cooking skills as determining factors in good culinary practice. The lack of cooking expertise among Huelva university students could partly explain the deterioration in their eating habits; gender differences might have shifted the balance towards closer

adherence to the Mediterranean diet, but this was not observed in our survey. With this in mind, future interventions should promote healthy eating habits that enable students to acquire skills to prepare healthier food in the kitchen.

CONCLUSIONS

The results from the survey of first-year students attending the University of Huelva reveal poor eating habits that need to be improved and redirected towards greater adherence to the Mediterranean diet. The eating habits that most clearly stand out are related to having breakfast and the use of olive oil in cooking. The least healthy dietary features were low consumption of fruit and vegetables, mirrored by the students' inclusion of these among their least favourite foods.

The results for adherence to the Mediterranean diet, the relation established to self-assessment of eating habits, the factors that influence their habits and food preferences all have important implications for future research. We believe that investigators should focus on the creation of healthy environments that enable students to rest and have access to healthy food, as well as programmes to develop cooking skills.

Future research should evaluate the efficacy of community interventions at university that aim to improve eating habits and students' cooking capabilities in order to strengthen scientific evidence in the promotion of healthy lifestyles and the prevention of the type of public health problems that are most prevalent in developed countries.

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