VOL V

Ciências da Saúde:

Investigação e Prática

Dr. Guillermo Julián González-Pérez
Dra. María Guadalupe Vega-López
(organizadores)

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PRÓLOGO

El volumen V de ***Ciências da Saúde: Investigação e Prática*** reúne un conjunto de investigaciones que reflejan la diversidad, complejidad y actualidad de los estudios en el campo de las Ciencias de la Salud. A través de distintos enfoques teóricos y metodológicos, los trabajos que aquí se integran abordan problemáticas relevantes que atraviesan tanto la práctica clínica como las dimensiones sociales, culturales y organizacionales de la salud.

Lejos de presentar una visión fragmentada, la obra propone una lectura articulada en torno a ejes temáticos que permiten comprender la salud como un fenómeno integral, en el que confluyen factores individuales, colectivos y estructurales. Esta organización no solo facilita el recorrido del lector, sino que también evidencia la riqueza de perspectivas que caracterizan a la investigación contemporánea en salud.

El primer eje, dedicado a la salud mental, el comportamiento y los contextos socioculturales, pone de relieve la importancia de comprender los procesos de salud y enfermedad desde miradas que integran lo psicológico, lo familiar y lo cultural. Los trabajos reunidos en esta sección invitan a reflexionar sobre experiencias de sufrimiento, aceptación y construcción de sentido, así como sobre prácticas cotidianas vinculadas a la salud, como los comportamientos alimentarios y las elecciones nutricionales en contextos colectivos, destacando la necesidad de enfoques sensibles a la diversidad de contextos y realidades.

El segundo eje aborda los sistemas de salud, la calidad de la atención, la mortalidad y los determinantes sociales, evidenciando que el acceso, la equidad y la experiencia de los usuarios, así como los indicadores sanitarios, no pueden analizarse al margen de las condiciones estructurales en las que se inscriben. Las investigaciones aquí presentadas contribuyen a comprender las tensiones existentes entre políticas, prácticas y realidades territoriales, los retos que plantean situaciones extremas como la pandemia de covid 19, así como los desafíos que enfrentan los sistemas de salud en la búsqueda de una atención más justa y eficiente.

En el tercer eje, centrado en la gestión, los procesos y las prácticas en salud, se destacan estudios que analizan aspectos técnicos y organizacionales fundamentales para el funcionamiento de los sistemas sanitarios. A través de investigaciones vinculadas a la procuración, evaluación y optimización de recursos, se pone de manifiesto la importancia de fortalecer los procesos para garantizar calidad, seguridad y sostenibilidad en la atención.

Finalmente, el volumen se cierra con un eje dedicado al cuidado, la enfermería y los grupos específicos, donde se recupera la dimensión más humana de la salud. Las

contribuciones aquí reunidas abordan el acompañamiento a poblaciones en distintas etapas de la vida, subrayando la relevancia del cuidado centrado en la persona, la autonomía y el bienestar como pilares fundamentales de la práctica sanitaria.

La presencia en este volumen de trabajos realizados por autores de diversos países latinoamericanos (Argentina, Chile, Colombia, Ecuador, México, Perú) y europeos (Portugal, Rumania) brinda al lector la posibilidad de conocer de primera mano no solo aspectos relevantes de la salud de nuestras naciones sino también tener una muestra de por dónde van las inquietudes investigativas en el campo de la salud en la actualidad.

En conjunto, esta obra ofrece una visión amplia y actual de las Ciencias de la Salud, integrando distintos niveles de análisis y destacando la necesidad de enfoques interdisciplinarios. Más que un compendio de estudios aislados, el volumen se presenta como un espacio de diálogo que invita a repensar las prácticas, fortalecer la investigación y contribuir a la construcción de sistemas de salud más humanos, equitativos y eficaces.

Dr. Guillermo Julián González-Pérez
Dra. María Guadalupe Vega-López

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CAPÍTULO 4

FOOD WASTE AND NUTRITIONAL INTAKE IN A UNIVERSITY CANTEEN: DIFFERENCES BY SEX AND AGE

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ABSTRACT: Food waste in collective catering services represents a major environmental, economic, and nutritional concern. University canteens constitute an ideal setting to investigate food waste generation and dietary choices among young adults, a population undergoing important lifestyle and dietary transitions. This study aimed to quantify avoidable food waste in a university canteen and to analyse meal selection patterns and nutritional composition according to sex and age. A cross-sectional observational study was conducted over four months in a university canteen. A total of 181 students aged 18–35 years participated. Food waste was quantified by direct weighing of dishes before and after consumption, supported by photographic records. Nutritional composition of the menus was calculated using DIAL® software, and statistical analyses were performed using SPSS®. The average avoidable food waste generated was 68.4 ± 123.7 g per person per meal. Women generated a greater amount of waste than men (90.8 ± 145.1 g vs. 46.0 ± 102.4 g per person per meal, respectively), although differences were not statistically significant. Age influenced meal selection patterns, whereas sex showed a lower impact. The average energy content of the selected lunch menus was 1067 kcal, representing approximately 38–42% of daily energy requirements. Nutritional analysis indicated a normocaloric and normoproteic profile, although the menus showed high lipid content

and relatively low carbohydrate intake, together with deficiencies in vitamin D and folic acid. These findings highlight the role of university food services as a relevant environment for studying food waste behaviour and dietary choices. Strategies such as portion size adjustments and educational interventions could contribute to reducing avoidable food waste while improving nutritional quality in university catering settings.
KEYWORDS: quantification; food waste; mass catering; university canteen; nutritional assessment.

DESPERDICIO DE ALIMENTOS Y CONSUMO NUTRICIONAL EN UN COMEDOR UNIVERSITARIO: DIFERENCIAS SEGÚN SEXO Y EDAD

RESUMEN: El desperdicio de alimentos en los servicios de restauración colectiva representa un importante problema ambiental, económico y nutricional. Los comedores universitarios constituyen un entorno ideal para investigar la generación de desperdicio alimentario y las elecciones dietéticas entre los adultos jóvenes, una población que atraviesa importantes transiciones en su estilo de vida y hábitos alimentarios. Este estudio tuvo como objetivo cuantificar el desperdicio alimentario evitable en un comedor universitario y analizar los patrones de selección de alimentos y la composición nutricional en función del sexo y la edad. Se realizó un estudio observacional transversal durante cuatro meses en un comedor universitario. Participaron un total de 181 estudiantes de entre 18 y 35 años. El desperdicio alimentario se cuantificó mediante el pesaje directo de los platos antes y después del consumo, con apoyo de registros fotográficos. La composición nutricional de los menús se calculó utilizando el software DIAL®, y los análisis estadísticos se realizaron con SPSS®. El desperdicio alimentario evitable promedio fue de 68,4 ± 123,7 g por persona por comida. Las mujeres generaron una mayor cantidad de desperdicio que los hombres (90,8 ± 145,1 g frente a 46,0 ± 102,4 g por persona por comida, respectivamente), aunque las diferencias no fueron estadísticamente significativas. La edad influyó en los patrones de selección de alimentos, mientras que el sexo mostró un menor impacto. El contenido energético promedio de los menús seleccionados para el almuerzo fue de 1067 kcal, lo que representa aproximadamente el 38–42% de los requerimientos energéticos diarios. El análisis nutricional indicó un perfil normocalórico y normoproteico, aunque los menús presentaron un alto contenido lipídico y una ingesta relativamente baja de carbohidratos, junto con deficiencias en vitamina D y ácido fólico. Estos hallazgos destacan el papel de los servicios de alimentación universitaria como un entorno relevante para el estudio del comportamiento del desperdicio alimentario y las elecciones dietéticas. Estrategias como el ajuste del tamaño de las porciones y las intervenciones educativas podrían contribuir a reducir el desperdicio alimentario evitable, al tiempo que mejoran la calidad nutricional en los entornos de restauración universitaria.
PALABRAS CLAVE: cuantificación; desperdicio de alimentos; restauración colectiva; comedor universitario; evaluación nutricional.

1. INTRODUCTION

University canteens are collective catering establishments that play an essential role in promoting and improving healthy eating habits among students (Jerez et al., 2018). In this context, the provision of varied, balanced, and sustainable

menus can contribute to shaping dietary behaviors and supporting both current and future health outcomes (Martínez-Riera et al., 2018). However, the university stage is characterized by profound lifestyle changes, including increased autonomy in food choices, irregular eating patterns, and greater consumption of meals outside the home (Al-Shehri et al., 2017, Cervera et al., 2013, Arts et al., 2014). These changes often result in diets characterized by excess intake of proteins and fats, together with insufficient consumption of carbohydrates and micronutrients, potentially leading to nutritional imbalances (Cutillas et al., 2013, Yılmaz et al., 2020).

At a global level, these dietary patterns are linked to the increasing prevalence of overweight and obesity, which has nearly tripled in recent decades, affecting a significant proportion of the young adult population (WHO, 2025, Flegal et al., 2012). Simultaneously, inadequate dietary intake has contributed to widespread micronutrient deficiencies, affecting nearly one-third of the global population and increasing the risk of chronic diseases (WHO, 2025). In university populations, previous studies have reported notable rates of overweight and unhealthy eating behaviors, often driven by food preferences rather than nutritional considerations (Wu et al., 2019).

In parallel, food consumption behaviors in collective catering settings are closely associated with food waste generation. Food waste, defined as food suitable for human consumption that is discarded or left uneaten, represents a major global challenge addressed within the framework of the Sustainable Development Goals, particularly target 12.3 (FAO, 2024). It is estimated that approximately one-third of all food produced worldwide is lost or wasted, accounting for around 1.3 billion tonnes annually (FAO, 2024, Thi et al., 2015). In food service environments, a significant proportion of this waste corresponds to *plate waste*, which reflects not only portion sizes and menu composition but also consumer preferences and eating behavior.

Consumer-related factors play a central role in food waste generation. Age, sex, food preferences, and attitudes towards sustainability have been identified as key determinants influencing both food selection and the amount of food discarded (González-Santana et al., 2020). In university populations, where individuals are exposed to new social and dietary environments, these behaviors may be particularly relevant. The mismatch between portion sizes offered and actual consumption, as well as the selection of dishes based on preference rather than nutritional needs, may contribute to increased levels of avoidable food waste. Beyond its ethical and economic implications, food waste has a substantial environmental impact. It is estimated that food consumption accounts for a considerable proportion of environmental pressures in the European Union, including greenhouse gas emissions and resource use (Huysman et al., 2016, Hoejrup & Merciai,

2014). Therefore, reducing food waste is a key strategy for improving resource efficiency and mitigating climate change (FAO, 2025).

Despite the growing interest in food waste, studies simultaneously addressing food choice, nutritional quality, and waste generation in real collective catering environments remain limited, particularly in university settings. Understanding the interaction between these factors is essential to designing effective interventions aimed at improving both dietary quality and sustainability.

In this framework, university canteens constitute an ideal setting for simultaneously studying dietary choices, nutritional quality, and food waste generation.

Therefore, this study aimed to quantify food waste generated in a university canteen, to analyze meal selection patterns according to sex and age, and to evaluate the nutritional composition of the selected menus. Additionally, this study seeks to explore the relationship between food choice, nutritional intake, and waste generation within a real collective catering environment.

2. EXPERIMENTAL METHODS

An observational cross-sectional study was carried out for 4 months in a university canteen where a lunch menu (three starters and three main courses are offered) is served daily, consisting of 5 items: starter, main course, dessert, bread, and beverage (Table 1). The starters on offer can be grouped into five options: salads, vegetables, pasta, rice and legumes; and three options are offered as main course: meat, eggs, convenience food or fish, accompanied by vegetables or fries, at the costumer´s choice. There is also the option of choosing two first or two seconds. Seasonal fresh fruit, yogurt or dairy desserts are served daily. Bread can be either white or wholegrain and the following beverages are offered: water, soft drinks, beer, or wine.

2.1. PROCEDURE

A total of 181 individuals between the ages of 18 and 35 participated randomly recruited all of them university students from the same faculty. To simplify the data analysis, age groups were classified as under or equal to 24 years and older or equal to 25 years. During the days of sample collection, the menu served was a winter menu, predominantly made up of baked dishes, stews and soups. The daily menu offered three starters, three second courses, four dessert options, two types of bread, and four beverage options. Each dish was classified by its main and majority ingredients (raw vegetables, cooked vegetables, rice, pasta, potato, legumes, meat, fish, eggs, convenience food and other

dishes). As for the dishes in which vegetables are the main ingredient, a differentiation was made between raw vegetables (all in the form of salads) and cooked vegetables (with all kinds of cooking techniques).

The participants chose their meals without the knowledge that their leftovers, nutritional composition, and choice of meals would be analyzed. For the analysis of food waste, only avoidable waste was studied, which is all the food that is still suitable for human consumption ending up being wasted, and inevitable waste (bones, shells, skins, viscera, etc) is not considered (HLPE, 2014). Food waste was measured by weighing the dish before and after a meal.

2.2. ETHICAL CONSIDERATIONS AND INFORMED CONSENT

This study was conducted according to the guidelines laid down in the Declaration of Helsinki, and all procedures involving human subjects/patients were approved by the Ethics Committee of the University of Valencia, Spain (Registration number: H20190401153513). Written informed consent was obtained from all subjects/patients. All participants were informed of the objectives of the study and the involvement of their participation and subsequently signed an informed consent form.

2.3. DATA COLLECTION

Each complete tray, with all the food items, was photographed (Samsung Galaxy Tab A 10.1 Wi-Fi SM-T580 32G 2016) before and after meals to record the type and content of each meal. The collection of personal data of each participant was self-reported, and sex, age, weight, height, and the university study in progress were registered. Weight and height were calculated according to the Body Mass Index.

In addition, information on starters, main courses, desserts, beverages, and bread was collected. A visual description of the characteristics of each dish was made, and the weight was noted in grams of each dish before and after the intake and weight of the empty dish, which allows calculating the size of the helping, actual intake, and total net waste. Weighing was done with a 5000 ± 1g precision scale, Beurer living kitchen scale (Beurer GmbH, Ulm, Germany).

2.4. NUTRITIONAL COMPOSITION ANALYSIS AND PREFERENCES REGARDING THE CHOICE OF DISHES

For the calculation and analysis of the nutritional composition of each complete menu offered (first, second, dessert, beverage and bread), the PROGRAM DIAL®

3.10.2.0 was used (Ortega et al., 2019). The variables studied by this analysis are shown in Table 1. Data collected over 4 months (181 trays) were sorted into first course, second course, dessert, bread, and beverage. The main dishes were grouped by their main ingredient so that preferences in food groups could be determined, allowing the study of preferences.

Table 1: Variables studied and nutritional objectives for the Spanish population.

Macronutrients and fiber	**Lipid profile**	**Vitamins**	**Minerals**	**Energy (kcal)**
Proteins (12-15%)	SFA ≤ 7- 8 %	Vitamin D (5µg/day)	Calcium (1000mg/day)	W: 2400
Lipids (30-35%)	PUFA ≤ 5%	Folic acid (>400 µg/day)	Sodium (2000mg/day)	M: 3000
Carbohydrates (50-55%)	MUFA ≤ 20%			
Fiber (25 g/day)	Cholesterol (<300mg/day)			

% Data in percentage is about energy intake. SFA, saturated fatty acids. PUFA, polyunsaturated fatty acids. MUFA, monounsaturated fatty acids. W, women. M, Men.

2.5. STATISTICAL ANALYSIS OF THE RESULTS

The data was analyzed with the SPSS® 26.0 statistical program (IBM, IBM Chicago, Illinois, USA) for Windows®. To investigate the choice of dishes, an analysis of categorical variables was performed, and to investigate the waste generated and nutritional assessment of the menu, an analysis of quantitative variables was conducted. The influence of two factors was studied: sex (male/female) and age (≤24 years and ≥25 years). Categorical variables are described using absolute and relative frequencies. Pearson's Chi-square test was performed to be able to analyze preferences regarding the choice of dishes according to the factors studied. For quantitative data, the mean and standard deviation were analyzed and to check for significant differences a variance analysis (ANOVA) was performed, depending on sex and age. In both cases, the $p < 0.05$ value was considered to assess statistical significance.

3. RESULTS

The description of the population studied in total was n=181, 107 women (age 24±.3, BMI 22.5±2.8 kg/m2) 74 men (age 22.5±2.8, BMI 23.6±2.2 kg/m2).

The choice of courses according to sex and age is shown in Table 2. When comparing the choice of first and second courses by women and men, no statistically

significant differences were found between both sexes. The analysis of choice by age shows that men ≤24 years chose mainly vegetable-based dishes (X2(1)= 11.353, p= 0.001) and convenience food (X2(1)= 3.929, p= 0.047). However, hardly ever did they choose legumes, potatoes or eggs. In the case of women, the only significant differences in choice, depending on age, were observed in fish-based dishes (X2(1)= 4.622, p= 0.032) in the ≤24 years old group. In 27% of the choices made, first courses were chosen as second, and 18.5% of second courses were chosen as first. It was also observed that when rice, pasta or legumes were chosen as a second course, a salad was usually the first course. The majority of choices in the men's group, regardless of age are rice and pasta and as a second course, meat. As for women, vegetables and pasta as a first course and meat and fish as second course.

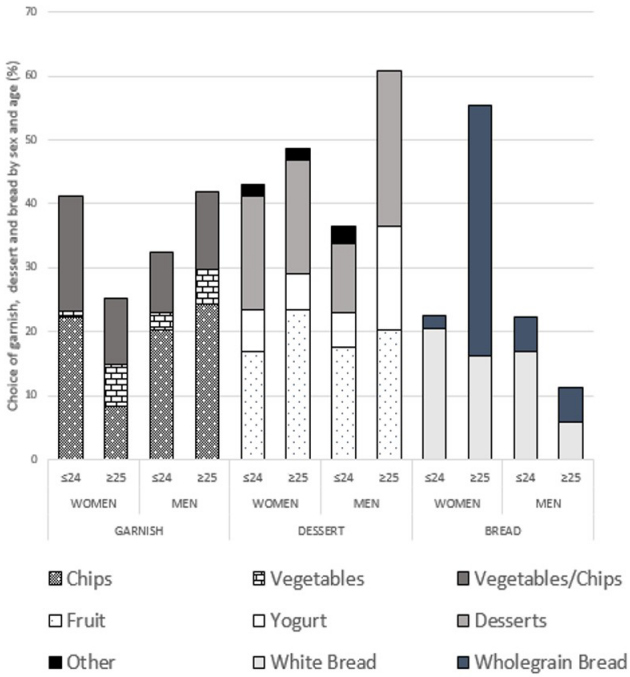
Table 2 Choices (%) of first and second courses by majority ingredient, gender, and age.

			Salad	Vegetables	Rice	Pasta	Legumes	Meat	Fish	Potato	Pre-Cooked	Other	Eggs
W	1st	≤24 *(n=50)*	7.5	9.3	9.3	15.9	0.9	1.9	-	-	-	0.9	-
		≥25 *(n=57)*	8.4	13.1	8.4	14.0	2.8	2.8	-	2.8	-	0.9	-
	2nd	≤24 *(n=50)*	-	-	0.9	1.9	1.9	19.6	11.6*	-	6.5	1.9	1.9
		≥25 *(n=57)*	-	-	4.7	4.7	1.9	15.9	5.6	1.9	3.7	-	-
M	1st	≤24 *(n=28)*	5.4	10.8*	8.1	10.8	-	-	1.4	-	1.4	-	-
		≥25 *(n=46)*	8.1	1.4	17.6	21.6	8.1	2.7	-	2.7	-	-	-
	2nd	≤24 *(n=28)*	-	-	1.4	2.7	-	14.9	6.8	-	6.8*	4.1	-
		≥25 *(n=46)*	-	-	4.1	1.4	1.4	23	10.8	-	8.1	1.4	1.4

-: They are not chosen. For sex, course and age statistical significance ($p<0.05$) is represented with an asterisk. Statistical differences are represented between age groups for each gender. Data is shown in percentage of the sample of each choice.

Figure 1 shows the results of the chosen garnish, dessert and bread by sex and age. As for the garnish, the results show that fries were the most popular option (61.3%).

Figure 1. Choice of garnish, dessert and bread by sex and age.



There were statistically significant differences between the two sexs for the age group of ≥ 25 years (X2(1)= 5.719, p= 0.017). In the choice of dessert, yogurt and the others were the minority option (15.5%), compared to fruit (41.4%) and dairy desserts (39.2%), with women choosing more fruit, and men choosing yogurt more often. No significant differences were found in the choice of bread. However, women ≥25 years old tend to choose mainly wholegrain, while men usually choose white bread. The student's beverage of choice is water (80.7%).

The results of the nutritional assessment (Table 3) are compared according to the nutritional objectives for the Spanish population (Aranceta-Bartrina et al., 2019) shown in Table 1. In a variance analysis, statistically significant differences in energy (F= 4.299, p= 0.015) and carbohydrate (F= 5.116, p= 0.007) intake are observed, with men having higher values.

In the same row, statistical significance (p<0.05) is represented with an asterisk. Data is shown in the reached percentage of the specific nutritional objective. Energy and fiber have been calculated based on the specific recommendations for men and women. SFA, saturated fatty acids. PUFA, polyunsaturated fatty acids. MUFA, monounsaturated fatty acids.

Table 3 Average, standard deviation, and percentage about the specific nutritional objective of energy, macronutrient, fiber, and micronutrients for lunch according to gender.

	Women	%	Men	%	Average
Energy (kcal)	1011 ± 371*	42.2	1157 ± 362*	38.5	1067 ± 375
Proteins (g)	40.9 ± 15,6	16.5	45.0 ± 13.8	16.0	42.5 ± 15.1
Carbohydrates (g)	89.5 ± 40,0*	36.1	106.9 ± 36.3*	38.0	96.3 ± 39.4
Fiber (g)	9.6 ± 5.1	38.4	10.4 ± 5.2	41.6	9.8 ± 5.1
Lipids (g)	52.3 ± 23.3	47.3	57.4 ± 25.2	46.0	54.2 ± 24.2
SFA (g)	13.6 ± 6.5	12.1	15.3 ± 7.1	11.9	14.2 ± 6.8
PUFA (g)	10.2 ± 6.5	9.1	10.3 ± 5.9	8.01	10.2 ± 6.2
MUFA (g)	24.3 ± 13.0	21.5	27.3 ± 14.3	21.2	25.5 ± 13.5
Cholesterol (mg)	189 ± 132	63.0	173 ± 89	57.7	182 ± 116
Folic Acid (µg)	131 ± 90	32.7	136 ± 85	34.0	132 ± 87
Vitamin D (µg)	1.54 ± 2.69	30.8	1.24 ± 2.35	24.8	1.42 ± 2.54
Calcium (mg)	317 ± 189	31.7	378 ± 225	37.7	341 ± 205
Sodium (mg)	1919 ± 3625	96.0	2056 ± 3882	125.3	1979 ± 3704

In the same row, statistical significance ($p<0.05$) is represented with an asterisk. Data is shown in the reached percentage of the specific nutritional objective. Energy and fiber have been calculated based on the specific recommendations for men and women. SFA, saturated fatty acids. PUFA, polyunsaturated fatty acids. MUFA, monounsaturated fatty acids.

Table 4 shows food waste generated by sex and age. The amount of waste generated by women is larger than that generated by men (90.8 ± 145.1 and 46.0 ± 102.4 g/person/menu, respectively) without significant differences. Considering the average values of the serving sizes for the first (273.6 ± 61.1g) and the second course (248.9 ± 72.9g), the waste generated was 7.9% and 13.3%, respectively. It is in the group of women ≤24 years old and for the second course where the greatest amount of waste was found, with 22.0% of the dish served. It is important to emphasize in the case of bread that waste was 16.7% for an average serving portion of 62.4 ± 15.0g.

Table 4 Quantity of avoidable waste by course (g/person/dish) and total (g/person/meal) according to age and gender groups.

		First Course	Second course	Dessert	Beverage	Bread	Total
W	**≤ 24**	27.7 ± 36.7	55.3 ± 68.1*	7.1 ± 22.4	0.9 ± 5.8	14.2 ± 27.0	105.2 ± 160.0*
	≥ 25	28.7 ± 34.8	31.6 ± 43.3	6.2 ± 18.4	2.3 ± 16.8	7.5 ± 17.2	76.3 ± 130.1
M	**≤ 24**	14.4 ± 31.2	24.1 ± 46.7	8.1 ± 27.8	0.0 ± 0.0	5.4 ± 5.4	50.0 ±111.1
	≥ 25	10.2 ± 20.7	13.1 ± 24.5	4.2 ± 18.2	1.7 ± 11.2	12.8± 19.1	42.0 ± 93.7
Total		21.5 ±32.6	33.2 ± 52.2	6.3 ± 21.1	1.4 ± 11.5	10.4 ± 20.5	68.4± 123,7

Total= sum of starter, main course, dessert, beverage and bread waste. Statistically significant differences ($p<0.05$) are represented with an asterisk. W: woman, M: man.

4. DISCUSSION

The overall results show that there are virtually no differences between age groups: the choice of dishes is very similar, perhaps because of the gastronomic culture of the area or the general preferences of the students. In general, the Mediterranean diet is followed (Antonopoulou et al., 2020, Serra-Majem et al., 2019), with dishes in which vegetables predominate, rice is typically served as paella, and white meat and fish. Nutritional assessment indicates that the average caloric choice is 1067 kcal, being 145 kcal higher in men than in women, taking into account that the total daily energy corresponds to 3000 kcal and 2400 kcal, respectively, the values of the lunch intake would be within the recommended daily quantities (Aranceta-Bartrina et al., 2019) representing 42% in women and 38% in men of daily energy requirements, but would be higher than the recommended percentage the midday intake (30-40%) in women (Carbajal, 2018). However, this value would be lower than in other similar studies conducted, Cutillas et al. (2013) calculated 2075 kcal for the midday intake on a sample of 223 students, Fernandez-Torres et al. studied the percentage on recommended dietary allowance, reaching much higher results than this study, energy accounted for 88.3% and 110.9% of requirements in men and women, respectively, for the entire day, lipids 83.4% in men and 107.8% in women. The values for the lunch menu of this study could indicate that at the end of the day there could be an excessive consumption of energy, proteins and lipids, especially SFA, MFA and cholesterol, as evidenced by studies where lipid and protein values are above those recommended, finding 18% of SFA (Teresa & Escudero, 2010). In another study, the energy provided by lipids was 37.1± 7,0% of total energy [6], while other authors observed that 92,8% of total energy intake in lunch comes from lipids (Torres et al., 2015). As for macronutrients, the energy values provided by proteins would be 15% in both women and men, which would constitute 16.5% and 16%, respectively, of the total proteins needed during the entire day. The resulting lipids account for more than half of what is needed per day, with SFA and PFA being the highest, this could come from the use of sunflower oil in canteen cooking. In terms of carbohydrate consumption, the amount is lower than what is recommended per day for both men and women, and dietary fiber shows similar values compared to the study carried out by Baltasar Ruiz-Roso (Ruiz-Roso & Pérez-Olleros, 2010) on the fiber consumed in Spain, with data of 7.42 ± 0.1 g/1000kcal. Other similar studies present carbohydrate data indicating a deficit of this macronutrient; for example, Cutillas et al., (2013) obtained carbohydrate values of 45.7 ± 6.9%, and Iglesias and Escudero (2010) of 42.6 ± 25.3%, but with values closer to the recommendation of 50% of energy. In terms of minerals, sodium levels present in food cover the daily

requirements with a single intake, with 125% in men and 96% in women (Cutillas et al., 2013, Torres et al., 2015). These values are much higher than in a similar study, where sodium values of 671.4±374.5mg were found per main course, which would correspond to 13.4% over the total (Barbosa et al., 2018). Calcium values for the population studied are deficient; however, breakfast is the daily meal in which the largest amount of calcium is consumed through milk consumption (Aranceta-Bartrina et al., 2019). When it comes to vitamin use, vitamin D is one of the world's most deficient micronutrients (Navarro & Quesada, 2014). However, as can be seen from the results obtained, this vitamin level is low, but considering it is just one meal it can be compensated for by other meals during the day. Folic acid, an essential nutrient for women of childbearing potential (Koga et al., 2020) is deficit in this study and lower in women than in men as in the other study conducted in Costa Rica, where women had a low consumption of folic acid and Vitamin D (Hernández-Elizondo et al., 2019).

The average avoidable food waste in this faculty throughout the study sample (68.4 ± 123.7g/person/menu) was similar to the one obtained in Beijing, where 73.7 g/person/menu was obtained (Wu et al., 2019). However, this result is lower than that found in the study conducted at the University of Porto (Ferreira et al., 2013) showing a quantity of waste of 200g/person/meal and the University of Khalifa (Qatar) (Hernández-Elizondo et al., 2019) where all the dishes consumed on the menu were valued and generated a total waste of 211.1 kg/day, having calculated 3000 meals, would give a value of 228.2g/person/menu. This fact could be due to the range of dishes on the menu. Moreover, at Rhodes University (Visschers et al., 2020), a study was conducted with 7000 students over 21 days where data of 82.0g/person/menu were obtained, and a study made in Switzerland (Buzby & Guthrie, 2002) shows that after an educational intervention, between 80.0% and 87.0% of diners did not waste food.

The waste of dessert and beverage is negligible; dessert waste was mainly insignificant, and in the case of beverages, it should be considered that water is served in bottled individual plastic containers so that the user can take it away if he/she has some left after the meal.

A visual observation over 10 days showed that most users of the university dining hall left 1/3 of their food on the plate, including packaged bread, i.e., bread waste was quantified as 3.85g/person (Pinto et al., 2018). Compared with this study's results, bread is wasted at a rate of 16.7% for an average serving of 62.4 ± 15.0g. Another similar study shows that women have a larger amount of waste than men, with 15.5% and 11.5% respectively, as in this work, where women's bread waste was 17.4%, and men's was 14.6% (Morata et al., 2020).

5. CONCLUSIONS

Men under the age of 24 preferably choose vegetables as their first course, compared to those over 25 who opt for salads, dishes belonging to the group of carbohydrates, and legumes. On the other hand, in women there are no statistically significant differences in the choices between the first and second menu items; however, women under the age of 24 mostly opt for white bread, while those over 25 for wholegrain bread. By comparison, men ≤ 24 choose more wholegrain bread and more sugary soft drinks. The nutritional composition of the meals chosen is normocaloric, hyperlipidic, normoproteic, and low in carbohydrates; however, calcium and sodium values satisfy the needs. Nevertheless, the amounts of vitamins (B9 and D) are deficient.

In general, women waste twice as much food as men, regardless of age, with the size of portions for both sexes being the same. On the other hand, this study shows that the choice of food is mostly conditioned by the age of individuals and not by sex. In addition, food waste is higher in women than in men, a situation that should be addressed by, for example, offering different-sized portions.

With all these findings, future studies should investigate whether educational intervention in university students and cafeteria staff, as well as offering smaller portions, could raise awareness of the problem of avoidable food waste and lead to a reduction thereof.

REFERENCES

Al-Shehri, H. M., Al-Qahtani, A. M., Shaikh, I. A., et al. (2017). Assessment of lifestyle and eating habits among undergraduate students in Najran University, Saudi Arabia. *International Journal of Medical Science and Public Health*, 6(3), 1–6.

Antonopoulou, M., Mantzorou, M., Serdari, A., et al. (2020). Evaluating Mediterranean diet adherence in university students. *International Journal of Health Planning and Management*, 35(1), 5–21. https://doi.org/10.1002/hpm.2908

Aranceta-Bartrina, J., Partearroyo, T., López-Sobaler, A. M., et al. (2019). Updating the food-based dietary guidelines for the Spanish population: The SENC proposal. *Nutrients*, 11(11), 2675. https://doi.org/10.3390/nu11112675

Arts, J., Fernandez, M. L., & Lofgren, I. E. (2014). Coronary heart disease risk factors in college students. *Advances in Nutrition*, 5(2), 177–187. https://doi.org/10.3945/an.113.005447

Barbosa, M. I., Fernandes, A., Gonçalves, C., et al. (2018). Sodium and potassium content of meals served in university canteens. *Portuguese Journal of Public Health*, 35, 172–178. https://doi.org/10.1159/000488355

Buzby, J. C., & Guthrie, J. F. (2002). *Plate waste in school nutrition programs*. USDA. https://www.ers.usda.gov/publications/pub-details/?pubid=44613

Carbajal, Á. (2018). *Manual de nutrición y dietética*. Universidad Complutense de Madrid. https://eprints.ucm.es/id/eprint/22755

Cervera, F., Serrano, R., Vico, C., et al. (2013). Food habits and nutritional assessment in a university population.

Cutillas, A. B., Herrero, E., de Andrés, A., et al. (2013). Prevalence of underweight, overweight and obesity, energy intake and dietary caloric profile in university students from the Region of Murcia (Spain). *Nutrición Hospitalaria*, 28(3), 683–689. https://doi.org/10.3305/nh.2013.28.3.6441

Ferreira, M., Martins, M. L., & Rocha, A. (2013). Food waste as an index of foodservice quality. *British Food Journal*, 115(11), 1628–1637. https://doi.org/10.1108/BFJ-08-2011-0206

Flegal, K. M., Carroll, M. D., Kit, B. K., & Ogden, C. L. (2012). Prevalence of obesity and trends in body mass index among U.S. adults, 1999–2010. *JAMA*, 307(5), 491–497. https://doi.org/10.1001/jama.2012.39

Food and Agriculture Organization of the United Nations. (2024). *Platform on food loss and waste*. https://www.fao.org/platform-food-loss-waste

Food and Agriculture Organization of the United Nations. (2025). *Sustainable Development Goal 12: Ensure sustainable consumption and production patterns*. https://www.fao.org/sustainable-development-goals/goals/goal-12

González-Santana, R. A., Blesa, J., Frígola, A., et al. (2020). Dimensions of household food waste focused on family and consumers. *Critical Reviews in Food Science and Nutrition*, 62(9), 2342–2354. https://doi.org/10.1080/10408398.2020.1740644

Hernández-Elizondo, J., Solera-Herrera, A., Carpio-Rivera, E., et al. (2019). Nutritional assessment and phytoestrogen exposure in university students. *Nutrición Hospitalaria*, 36(3), 647–657. https://doi.org/10.20960/nh.02654

High Level Panel of Experts on Food Security and Nutrition. (2014). *Food losses and waste in the context of sustainable food systems*. FAO. https://www.fao.org/3/i3901e/i3901e.pdf

Hoejrup, J., & Merciai, S. (2014). *Life cycle assessment of global food consumption*. https://lca-net.com/files/LCAfood2014-LCAofGlobalFoodConsumption.pdf

Huysman, S., Schaubroeck, T., Goralczyk, M., et al. (2016). Quantifying the environmental impacts of a European citizen through a macro-economic approach. *Journal of Cleaner Production*, 124, 217–225. https://doi.org/10.1016/j.jclepro.2016.03.060

Jerez, C., Lucía, M., Gamboa-Delgado, J., et al. (2018). Satisfaction of university students against an institutional food service and its associated factors. *Nutrición Clínica y Dietética Hospitalaria*, 38(3), 93–103.

Koga, F., Kitagami, S., Izumi, A., et al. (2020). Relationship between nutrition and reproduction. *Reproductive Medicine and Biology*, 19(3), 254–264. https://doi.org/10.1002/rmb2.12316

Martínez-Riera, J. R., Gallardo, C., Aguiló, A., et al. (2018). The university as a community: Health-promoting universities. *Gaceta Sanitaria*, 32, 86–91. https://doi.org/10.1016/j.gaceta.2017.10.004

Morata, M. P., González-Santana, R. A., Blesa, J., et al. (2020). Habits and food waste in university students. *Nutrición Hospitalaria*, 37(2), 349–358. https://doi.org/10.20960/nh.02745

Navarro, C., & Quesada, J. M. (2014). Vitamin D deficiency in Spain: Reality or myth? *Revista de Osteoporosis y Metabolismo Mineral*, 6(1), 5–10.

Ortega, R. M., López-Sobaler, A. M., Andrés, P., et al. (2019). *DIAL software for assessing diets and food calculations (Version 3.10.2.0)*. Universidad Complutense de Madrid & Alce Ingeniería. http://www.alceingenieria.net/nutricion/descarga.htm

Pinto, R. S., Pinto, R. M., Melo, F. F. S., et al. (2018). Awareness campaign to reduce food waste in a university canteen. *Waste Management*, 76, 28–38. https://doi.org/10.1016/j.wasman.2018.02.030

Ruiz-Roso, B., & Pérez-Olleros, L. (2010). Dietary fibre intake in Spain and associated health benefits. *Revista Española de Nutrición Comunitaria*, 16(3), 147–153.

Serra-Majem, L., Román-Viñas, B., Sánchez-Villegas, A., et al. (2019). Benefits of the Mediterranean diet: Epidemiological and molecular aspects. *Molecular Aspects of Medicine*, 67, 1–55. https://doi.org/10.1016/j.mam.2019.02.001

Teresa, I. M., & Escudero, E. (2010). Nutritional assessment in nursing students. *Nutrición Clínica y Dietética Hospitalaria*, 30(3), 21–26.

Thi, N. B. D., Kumar, G., & Lin, C. Y. (2015). An overview of food waste management in developing countries: Current status and future perspective. *Journal of Environmental Management*, 157, 220–229. https://doi.org/10.1016/j.jenvman.2015.03.008

Torres, Á. F., Moreno-Rojas, R., & Martos, F. C. (2015). Nutritional content of foods offered and consumed in a Spanish university canteen. *Nutrición Hospitalaria*, 31(3), 1302–1308. https://doi.org/10.3305/nh.2015.31.3.8348

Visschers, V. H. M., Gundlach, D., & Beretta, C. (2020). Smaller servings vs. information provision: Interventions to reduce plate waste. *Waste Management*, 103, 323–333. https://doi.org/10.1016/j.wasman.2019.12.027

World Health Organization. (2025). *Obesity and overweight*. https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight

Wu, Y., Tian, X., Li, X., et al. (2019). Characteristics, influencing factors, and environmental effects of plate waste at university canteens in Beijing. *Resources, Conservation and Recycling*, 149, 151–159. https://doi.org/10.1016/j.resconrec.2019.05.008

Yılmaz, T., Dalbudak, I., & Yiğit, Ş. (2020). Relationship between life satisfaction and nutrition of students at the faculty of sports and health sciences. *Progress in Nutrition*, 22(2), 645–659. https://doi.org/10.23751/pn.v22i2.8613

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ÍNDICE REMISSIVO

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EDITORA ARTEMIS
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