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Culture and eating behaviour of nursing students of the University of Granada: a cross-sectional study

Cultura y comportamiento alimentario de los estudiantes de enfermería de la Universidad de Granada: un estudio transversal

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ABSTRACT

Introduction: The university period involves moving away from the family, which influences eating habits. Health is considered a key criterion in food choices, although it varies according to social and cultural context. The study focused on describing and correlating the eating behaviours of university students in the health field on the Melilla campus, with special attention to cultural influence.

Methods: with a convenience sampling approach, 192 nursing students enrolled in the Faculty of Health Sciences of Melilla at the University of Granada were selected to investigate the status of eating behaviours, food consumption preferences, and healthy food using descriptive and inferential analysis with correlational statistical techniques.

Results: the most Christians prepare their meals themselves (60.5%), while 70.3% of Muslims report that it is their parents who prepare them. Muslim women were the group most likely to remove all visible meat fat (82.2%). A significant association was found between this behaviour and gender ($\chi^2 = 10.955$, $p = 0.012$) as well as religion ($\chi^2 = 15.890$, $p = 0.014$). Preference for consumption of vegetables, fish, and seafood is higher among Muslims, while consumption of alcohol and ultra-processed food is higher in Christians These findings were statistically significant ($p < 0.001$ for alcohol consumption; Kruskal-Wallis test, $H = 58.264$, $p < 0.001$).

Conclusions: health science students at the Melilla Campus exhibit unhealthy eating habits influenced by cultural differences, highlighting the need for educational programs on nutrition for future healthcare professionals as community leaders.

Funding: The authors declare that there was no funding to conduct this study.

Keywords: Eating Behaviour; Nursing Students; Health; Culture; Education.

RESUMEN

Introducción: el periodo universitario implica un alejamiento de la familia que influye en los hábitos alimentarios. La salud se considera un criterio clave en la elección de alimentos, aunque varía según el contexto social y cultural. El estudio se centró en describir y correlacionar los comportamientos alimentarios de estudiantes universitarios del área sanitaria en el campus de Melilla, con especial atención a la influencia cultural.

Metodología: con un enfoque de muestreo por conveniencia, se seleccionaron 192 estudiantes de enfermería matriculados en la Facultad de Ciencias de la Salud de Melilla de la Universidad de Granada para investigar el estado de las conductas alimentarias, las preferencias de consumo de alimentos y la percepción de alimentos saludables utilizando un análisis descriptivo e inferencial con técnicas estadísticas correlacionales.

Resultados: la mayoría de los cristianos preparan ellos mismos sus comidas (60.5%), mientras que el 70.3% de los musulmanes afirman que son sus padres quienes se las preparan. Las mujeres musulmanas fueron el grupo con mayor probabilidad de eliminar toda la grasa visible de la carne (82,2%). Se encontró una asociación significativa entre este comportamiento y el género (χ^2 = 10,955, p = 0,012) así como la religión (χ^2 = 15,890, p = 0,014). La preferencia por el consumo de verduras, pescado y marisco es mayor entre los musulmanes, mientras que el consumo de alcohol y alimentos ultraprocesados es mayor en los cristianos ($p < 0.001$ para el consumo de alcohol; prueba de Kruskal-Wallis, H = 58.264, $p < 0.001$).

Conclusiones: los estudiantes de ciencias de la salud en el Campus de Melilla presentan conductas alimentarias poco saludables, influenciadas por diferencias culturales, lo que evidencia la necesidad de programas educativos en nutrición para futuros profesionales sanitarios como referentes comunitarios.

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Palabras clave: Comportamiento alimentario; Estudiantes de enfermería; Salud; Cultura; Educación.

KEY MESSAGES

- Health is shown as a value that defines consumers' food choices.
- Food selection differs depending on the social and cultural environment.
- Health-oriented education is very important for future nurses within community models.

INTRODUCTION

Food and certain dietary habits influence the development of several diseases, such as cardiovascular disease, type 2 diabetes and cancer[1]. Eating behaviour includes all actions related to the choice, preparation and consumption of what we eat[2].

Today, individuals are increasingly aware of self-care and seek products that promote health; nevertheless, in recent decades, what we know as an eating pattern has been mostly altered in developed countries, thus affecting, among others, adolescents[3].

The university period is mainly characterised by distance from family; as a result, consumption habits are undoubtedly modified[4]. However, despite this growing responsibility for health, certain groups, such as university students, are especially vulnerable to adopting risky eating behaviours, which can lead to chronic disease[5].

University students show characteristic physiological changes, typical of young people, coupled with sociological and cultural changes, as a consequence of the commencement of university studies, the beginning of adult life, etc. These factors have a direct impact on food practices, which, in most cases, will be present throughout adolescents' lives[6].

College students are at greater risk for eating disorders, so it is crucial to promote healthy habits that will impact their future health. In addition, students in health-related fields should be knowledgeable about balanced nutrition, as they influence the promotion of healthy habits in the population[7].

Eating behaviour is not only a nutritional phenomenon, but also a cultural and social one. Beliefs, values and traditions, including religion, influence the acceptance or rejection of certain foods[8]. Religion establishes rules about what should be consumed and also affects the practice of fasting or dietary restrictions. In turn, factors such as gender and customs influence dietary decisions, which impacts eating habits, especially in a multicultural university environment[9]. Likewise, there are numerous studies that examine the impact of social and cultural characteristics on diet in Spain, which have studied eating behaviour from the point of view of sociology or anthropology[10].

Most studies on adolescent eating behaviour focus on sexuality and addictions, not on the promotion of healthy habits. Hence, this study aims to contribute data to the investigation on this very current and important topic[11].

Understanding the relationship between diet and health in university students is key to designing programs and policies that improve lifestyle and prevent disease. To do this, it is necessary to understand their eating behaviours and adapt nutrition education to the cultural and religious context[12], as religion influences both restrictions and the times and ways of eating[13].

The main objective of this study is to describe the eating behaviours of university students in the health area of the Melilla campus, and to analyse the cultural factors that influence their dietary choices.

METHODS

Design of study

A diagnostic, descriptive, and cross-sectional study was utilised, where information was collected by means of a validated questionnaire. For the selection of subjects, non-probability convenience sampling was conducted.

Instrumentation

The "Student Eating Behaviours Questionnaire"[14], validated for university students in the health field, was used, with 30 multiple-choice items plus sociodemographic variables. It is divided into three sections: eating behaviour, consumption preferences, and food perception, addressing aspects such as schedules, preparation, label reading, eating out, satiety, diets, beliefs, and barriers to change. Preferences (items P11-P22) were measured on a scale from 1 ("I dislike it very much") to 5 ("I like it very much"). The questionnaire was administered in paper format in Spanish and then translated into English.

Table 1 presents the distribution of items across the aforementioned blocks.

Table 1. Thematic blocks and number of items

Thematic blocks	Number (Items)
Sociodemographic	6
Eating behaviours	8 (P4-P10, P25)
Consumption preferences	16 (P1, P3, P11-P24)
Healthy food perception	6 (P26-P30, P2)

Study variables

Sociodemographic or identification variables were established as independent variables, namely gender, age, religion, origin, and cohabitation. Dependent variables are the answers given to the measured items making up the questionnaire, that is eating behaviours, consumption preferences, and food perception.

Data collection and selection criteria

Non-probability sampling was used with nursing students from the Faculty of Health Sciences of Melilla (University of Granada) between September and November 2022. Those who were not enrolled, were not nursing students, did not understand Spanish, or did not give consent were excluded. Participation was voluntary and anonymous, with a possible self-selection bias, which was attempted to be reduced by including students from different classes.

Data analysis and treatment

The data were analysed using SPSS 24.0. Descriptive statistics (frequencies and percentages) and association tests were used: chi-square for categorical variables (gender, religion), together with Cramér's V to measure the strength of the relationship. For non-parametric numerical variables, the Mann–Whitney U test (comparison between genders) and the Kruskal–Wallis test (comparison between religions) was applied, after checking for non-normality with Kolmogorov-Smirnov test.

Effect sizes were calculated using Cohen's d for the gender variable (small (0.2<d≤0.5), medium (0.5<d<0.8), or large (d≥0.8) effect size) and the "Eta squared, $\eta 2$" statistic for the religion variable (small (0.01<$\eta 2$≤0.06), medium (0.06< $\eta 2$<0.14), or large ($\eta 2$≥0.14)). Cohen's d helps to determine whether the differences between groups are practically significant, and Eta squared (η^2) for the religion variable, which provides an estimate of the variance in the dependent variable explained by religion.

Ethical aspects

Participation was anonymous and voluntary, with informed consent and in accordance with the Declaration of Helsinki.

Permission was granted by the Ministry of Education, Culture, and Sport (MECD) to provide questionnaires to university students at the Faculty of Health Sciences of Melilla and its approval corresponds to the number 201802658.

RESULTS

To determine the study sample, the total population of 382 nursing students was considered, with 192 participants in total. The sampling error was 5%, with a confidence level of 95%. Every student was from different nursing graduate studies with a mean age of 22.5 (SD=4.77), the minimum being 18 and the maximum 49.

Characteristics of the sample are reflected in Table 2.

The objective of the study was addressed considering the three blocks making up the questionnaire to assess university students' eating behaviours.

Table 2. Sociodemographic characteristics of the sample (*n* = 192)

Variables		Frequency (%)
Gender	Male	34 (17.9%)
	Female	158 (82.1%)
Origin	Melilla	73 (37.9%)
	Andalusia	88 (45.8%)
	Morocco	8 (4.3%)
	Other provinces	23 (12%)
Religion	Christian	111 (57.9%)
	Muslim	51 (26.4%)
	Agnostic	30 (16.0%)
Cohabitation	Parents	96 (50%)
	Partners or friends	71 (36.4%)
	Other relatives	11 (5.7%)
	Alone	14 (7.1%)

Block I: Eating behaviours

With respect to the most usual way of preparing food, 51.4% of participants answered that they prefer roasted or grilled food. Fried food was chosen by 19.3% and casserole and sauté food by 15.7%. The least predominant ways of cooking food are oven-cooked (3.6%) and boiled (10%). This variable is closely related to gender (χ^2=11.239, p=0.024) and religion (χ^2=21.704, p=0.002) although, in both cases, the effect size determined by Cramér's V is small (V=0.283, p=0.005 and V=0.278, p=0.005, respectively). It is mostly Christian women who prefer, on a significant basis, roasted and grilled food. As regards visible meat fat, 82.2% remove it completely, while 11.4% only remove a little. Only 6.4% do not remove any fat at all.

There is a significant statistical dependence association between such behaviour and the gender (χ^2=10.955, p=0.012; V=0.280, p=0.012) and religion (χ^2=15.890, p=0.014; V=0.238, p=0.014) variables, in this case being women, in particular Muslims, who remove all visible fat.

Almost half of students (47.9%) report that they prepare their own food, compared to 40% who indicate that their parents prepare it. There is a significant statistical association with the religion variable (χ^2=25.117, p<0.001; V=0.300, p<0.001). It is mostly Christians who prepare their own food (60.5%), while 70.3% of Muslim students report that food is prepared by their parents. Among healthy habits, from a nutritional point of view, it is important to follow a schedule for intake; however, this is not always the case, especially among university students. In this sense, only 45.7% answered that they do follow a schedule as opposed to 32.1% who do not have a schedule established for meals. Having or not having an eating schedule is related to the gender variable significantly (χ^2=11.253, p=0.024; V=0.284, p=0.024), with women having a schedule established.

In general, eating is a social action, which is why most people prefer to do it in company. Among our university students, 78.6% eat with others regularly, while 20.7% do so on occasion. When asked if they eat out, most of them (72.9%) answered that they do so sometimes, while 13.6% do it on a regular basis. The same percentage (13.6%) report that they do not usually do it. Finally, the percentage of students recognising that they stop eating when they feel full is 79.3%. However, there is a small percentage (5.7%) who find it difficult to stop eating, and 4.3% continue eating despite feeling bad for doing so.

Block II: Food consumption preferences

Taste is the determining factor for food consumption (54.3%) as opposed to nutritional content (33.6%). Likewise, it is taste determines food restrictions (47.9%) rather than personal health (33.6%). Neither case has an association with the gender or religion variables. Cold or room temperature water is the usual beverage throughout the day for 80.7% of participants. There is some dependence between this variable and religion, although the effect size is small

(χ^2=23.194, p<0.001; V=0.288, p<0.001). Christian students drink water more frequently in between meals, while Muslims prefer juice or tea.

Lastly, mass-produced pastries (24.3%) and fruits and vegetables (22.1%) are the foods chosen in between meals. A similar percentage (20.7%) report not consuming anything. There are statistically significant differences as regards gender in the consumption of meat and chicken and alcoholic drinks, with men preferring them (Table 3). Regarding religion, there are statistically significant differences when it comes to preference for vegetables and alcoholic drinks, with agnostics preferring vegetables and Muslims disliking alcoholic drinks very much (Table 4).

Table 3. Significance of food preferences (P11-P22) and gender

	Gender					*p*	
	Total (n=192)	**Female (n=158)**	**Male (n=34)**	**U**	**Z**		**Effect size**
	Mean (DS)	**Mean (DS)**	**Mean (DS)**				
Fruits	4.31(.80)	4.33(.81)	4.24(.77)	1321.5	-.692	.489	.81
Vegetables	3.75(1.13)	3.83(1.11)	3.36(1.18)	1083.5	-1.953	.051	1.12
Meat and chicken	**4.44(.73)**	**4.37(.76)**	**4.76(.43)**	**1018**	**-2.581**	**.010****	**.72**
Fish and seafood	4.14(.91)	4.13(.93)	4.16(.80)	1406	-.111	.911	.91
Dairy products	4.07(.96)	4.04(.98)	4.25(.89)	1188	-1.013	.311	.96
Bread, omelettes, pasta, cereals	4.40(.70)	4.38(.72)	4.48(.65)	1328.5	-.589	.556	.71
Pulses	3.42(1.03)	3.41(1.04)	4.48(1.04)	1354	-.475	.635	1.04
Sweets	4.24(.92)	4.24(.93)	4.24(.87)	1411	-.157	.875	.92
Eggs	4.04(.84)	4.02(.85)	4.17(.76)	1266.5	-.674	.500	.84
Nuts	4.06(.79)	4.04(.81)	4.16(.68)	1343.5	-.548	.584	.79
Alcoholic drinks	**2.70(1.26)**	**2.57(1.26)**	**3.28(1.13)**	**993**	**-2.513**	**.012***	**1.24**
Processed food	3.18(.99)	3.19(.99)	3.12(1.05)	1423.5	-.080	.936	1.00

U de Mann Withney Test, p*< .05; p**< .01; p***< .001

Table 4. Significance of food preferences (P11-P22) and religion

		Religion				*p*	
	Total (n=192)	**Christian (n=111)**	**Muslim (n=51)**	**Agnostics (n=30)**	**H**		**Effect size**
	Mean (DS)	**Mean (DS)**	**Mean (DS)**	**Mean (DS)**			
Fruits	4.31(.80)	4.22(.837)	4.51(.692)	4.32(.839)	3.359	.186	.029
Vegetables	**3.75(1.13)**	**3.53(1.242)**	**3.92(.983)**	**4.27(.703)**	**7.455**	**.025***	**.063**
Meat and chicken	4.44(.73)	4.46(.822)	4.41(.551)	4.41(.666)	1.609	.422	.004
Fish and seafood	4.14(.91)	4.00(.941)	4.41(.798)	4.18(.907)	5.266	.070	.043
Dairy products	4.07(.96)	4.05(.992)	4.14(.845)	4.05(1.090)	.073	.970	.002
Bread, omelettes, pasta, cereals	4.40(.70)	4.45(.727)	4.41(.599)	4.18(.795)	2.311	.261	.018
Pulses	3.42(1.03)	3.38(1.067)	3.32(1.132)	3.73(.703)	2.197	.404	.021
Sweets	4.24(.92)	4.30(.980)	4.24(.796)	4.05(.899)	1.852	.294	.019
Eggs	4.04(.84)	4.06(.913)	3.94(.715)	4.14(.774)	1.401	.859	.006
Nuts	4.06(.79)	4.12(.765)	3.92(.862)	4.09(.750)	1.484	.502	.027
Alcoholic drinks	**2.70(1.26)**	**3.25(.994)**	**1.30(.702)**	**3.05(1.113)**	**58.264**	**<.001*** **	**.446**
Processed food	3.18(.99)	3.31(.944)	2.89(.906)	3.18(1.259)	5.519	.063	.032

Kruskal Wallis Test, p*< .05; p**< .01; p***< .001

Block III: Healthy food perception

Food labels on packaged food are established by legislation. Such information must help us perform a logical selection to guide our eating habits. Nevertheless, labels are infrequently read, as reported by respondents; 37.1% indicate that they do not read them out of laziness, while 2.1% state that they do not understand them, as opposed to 48.6% who read and understand them.

When asked about what they do or would do to take care of their body, 50.7% indicate that taking care of their diet and working out as opposed to 4.3% who prefer to follow a special diet, and only 0.7% choose to have dietary supplements. Personal motivation and commitment are the factors deemed necessary to improve diet (50.7%), and time is another important factor (18.6%), while information, money, and social support are barely significant. Finally, 62.2% consider their diet to be different every day or sometimes per week, and most respondents (75%) feel capable of using nutritional advice to improve their health condition. No significant differences were found in this block with respect to gender or religion for neither of the items that make it up.

DISCUSSION

The sample obtained for the study is mostly female. Such data agree with different studies with such gender-based difference in participants, with mostly women studying this field of knowledge. Women are more comfortable performing tasks related to emotions, feelings, and care, which explains why the number of female students is higher[15].

Half of participants live with their parents. Food habits of adolescents may be related to their parents' food habits, hence the importance of the promotion of health not only be targeting adolescents but also the family[16]. Cooking is more frequently related to healthier eating habits among university students. In this research, we observe that almost half of students prepare their meals. However, determined that preparation is virtually based on opening packages and combining several ingredients[17].

There is a considerable percentage of participants who report not having eating schedules. Findings suggest that focusing on eating schedules may help prevent bad health results[18]. Most of our university students eat in company. A positive relationship has been demonstrated between frequency of eating together with relatives and a healthy diet[19]. Having healthy eating behaviours at home is related to healthier food choices[20].

The main reason for selecting food is taste[21]. Likewise, in this study, taste is the determining factor for the consumption of certain food as opposed to nutritional value. Cold or room temperature water is the usual beverage throughout the day for most participants. A study show that sugar-containing beverages contribute substantially to university students' daily calorie intake[22].

As regards intake of food, published studies reveal that young people (including healthcare-field university students) show unhealthy consumption, with an excessive consumption of saturated fat and refined sugar from processed food and sugar-containing beverages and foods with a low nutritional quality[23]. Reducing the consumption of foods high in saturated fats, trans fatty acids, or free sugars is important for everybody but especially for children and adolescents. Nutrition research reveals a deficiency in the consumption of vegetables, fruits, and fish, showing a preference for fried food and snacks, which leads to eating in between meals and consumption of sugar-containing beverages[24]. In this study the results are along the same lines.

In this investigation, body care mainly involved working out and following diets to keep in good shape. Research noted that a high percentage of participants read labels[25]. In our research, the results are in line with the abovementioned study. Most participants feel capable of using nutritional advice to improve their health status. Nutrition education may improve university students' daily intake[26]. Several authors affirm that factors such as lack of time may play a significant role when it comes to consuming healthy food, and they highlight the importance of designing programmes with effective strategies to encourage university students to improve their eating behaviours[27]. In this research, lack of motivation and time are deemed the main factors that must be addressed to improve dietary habits.

With respect to religion, it is worth noting that Catholicism establishes less demanding eating rules than other monotheistic religions, which focus on regulating, with fasting, the consumption of food at a certain time. Furthermore, according to Islamic belief, the consumption of pork is deemed a sin, as well as drinking alcohol among other foods or products specified as forbidden (*haram*)[28]. This study shows results along the same lines. Fish, according to Islam, are deemed *halal* (permissible), and in the results we observe that Muslims like fish and seafood very much, compared to Christians. Muslims drink more soft drinks, juices, or tea than Christians. Consumption of sugar-containing beverages is related to culture, among other factors. Such data coincide with other studies conducted among the Islamic population, in which the consumption of tea is very common[28]. In general, a study shows similar results with the prevalence of bad eating habits in adolescents and insist on the need to implement interventions to improve these eating behaviors[29].

Most instruments assess dietary intake quantitatively, without considering eating behaviors[30]. Combining both approaches provides a more comprehensive view. In this study, an eating behaviours questionnaire was used, which is useful for guiding nutritional interventions toward healthier habits[14].

The study has limitations: sampling was convenience-based and not stratified, so it only represents Catholics and Muslims, with a predominance of women, which is common in healthcare careers. As it is cross-sectional, it does not allow causality to be established, requiring longitudinal studies. It highlights the need to include university nutrition education to prevent long-term health problems. As a strength, it provides a little-studied view of food from a cultural perspective in a multicultural city.

CONCLUSIONS

University students in the health field in Melilla exhibit mixed eating behaviours: they prepare food properly and read nutrition labels, but they lack schedules, eat out, and have a high preference for sweets and alcohol. Although they watch their diet and exercise, they acknowledge a lack of motivation to improve. Differences are observed by gender (women remove more fat from meat, men consume more meat and alcohol) and by religion (Muslims

reject alcohol, consume more tea and juices, and remove more fat from meat; Christians prepare more of their own food, consume more alcohol, and reject fish and seafood more). In general, unhealthy habits persist, highlighting the importance of nutrition education, especially among future healthcare professionals, to prevent long-term diseases and further investigate the cultural influence on diet.

AUTHOR CONTRIBUTION

E.F-G, T.L-V, and M.L-O contributed to the creation and design of the study. S.N-P and MA.S-O designed the statistical plan and interpreted the data. M.M-B conducted the literature search. C.E-M performed the analyses and wrote the first draft with the help of E.F-G, and T.L-V. All authors critically reviewed this and previous versions of the paper.

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CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest conflicts of interest in the writing of the manuscript.

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