



## RESEARCH ARTICLE

## Exploration of Nursing students' dietary habits

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### Abstract

**Background :** During recent years, nutritional knowledge and eating habits of university students have received a great deal of attention, globally. University students especially those living away from home may experience significant environmental changes that exert a negative influence on the quality of their diet. The aim of this study was to explore dietary habits of nursing students in the area of Athens. **Method and material :** The sample of the study consisted of 435 Nursing students in Technological Educational Institution of Athens. Data were collected by the completion of a self report and anonymous questionnaire designed after elaborate literature review on dietary habits of university students. All statistical tests ( $\chi^2$  and Fischer exact test) were considered to be significant at an alpha level of 0.05 and were performed with the Statistical Package for Social Sciences software version 19.0. **Results:** The study results showed that 88.7% of students preferred home-cooked meals and 11.3% preferred ready meals. In regard to the frequency of consumption of ready meals (souvlaki, pizzas and fast food) 58.6% reported 'rare' consumption while 41.4% 'moderate' consumption. Female students had family made food, 'often'  $p=0,013$  while males ate 'often' ready meals outside home,  $p=0,030$ . Female

eating habits differed significantly in consumption and frequency of green vegetables compared to male,  $p<0,001$  and  $p=0,015$ , respectively. It was also found that males consumed meat 'very often' with a statistically significant difference than females,  $p=0,004$  while no difference was found between the two groups in terms of fish,  $p=0,179$  and legumes,  $p=0,308$ . Results also showed that 33.1% of students used tobacco, of whom 59% started before the age of 17. **Conclusions:** According to the findings of the study, nursing students move away from a traditional Mediterranean diet. Despite there are some gender differences in their dietary and health habits, nutrition and health promotion programs should be encouraged in the nursing curriculum in order to establish a healthier life style.

**Keywords:** Dietary habits, smoking, university students

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### Introduction

During last decades, a remarkable change in dietary habits has been noticed in Greece. The new dietary pattern includes increased consumption of animal products and low intake of fruits and vegetables is usually called 'Western diet' which significantly differs from the healthy 'Mediterranean diet' that involves high intake of fresh fruits, vegetables, olive oil and fish.<sup>1,2</sup>

Eating changes, lack of physical activity and sedentary life have significantly contributed to the increase of various diseases, mainly cardiovascular diseases, diabetes mellitus and obesity. More in detail, according to estimates for 2008, over 50% of both men and women in the WHO European Region were overweight, and roughly 23% of women and 20% of men were obese. Based on the latest estimates in European Union countries, overweight affects 30-70% and obesity affects 10-30% of adults. Apart from personal, family and



social disastrous consequences, obesity is also related to financial implications. For instance, obesity in adults accounts for up to 6% of direct health costs and more than 12% in indirect costs of shortened lives, reduced productivity and lowered incomes.<sup>3-5</sup>

Taking into account that eating habits are established from childhood, it is emphasized that obesity in childhood is leading to adolescence obesity and finally to adult obesity.<sup>6</sup> As a result, nutritional knowledge of university students and their food consumption pattern have received global attention. Indeed, the transition of young people from school to university has many health implications that are significantly related to food consumption patterns and associated nutritional risks.<sup>7</sup>

It is widely known that dietary habits usually change when young enter university. Interestingly, moving away from home, implies lack of time and knowledge in cooking and other food choices such as fast food which involves high saturated fat and meat, less fiber and fruits and mainly processed food. Moreover, university students are used to irregular meals, high-energy fat snacks along with drinks or sweets. It is not rare, that meals are often skipped by students while the management of food preparation is avoided. At the same time, the healthy way of living is disrupted by the studying hours that may vary every day.<sup>7-10</sup>

It is worth noting that, food consumption patterns vary among university students from European countries when living away from family home. For example, in Greece, students adopt positive changes such as decrease in whole-fat dairy products, white bread and margarine but they simultaneously decrease their consumption of fresh fruit, cooked and raw vegetables, oily fish, and increase their sugar and fast food intake.<sup>1</sup> Polish female students living had significantly less percentage of energy provided by total fat and higher percentage of energy from carbohydrate

compared to those who reside with their parents.<sup>9</sup> Irregular meal patterns and the consumption of high-energy snacks tend to become common in most European countries.<sup>8</sup>

Nursing university students is a particular interest age group for adopting healthier practices and being deep informed concerning health issues. Moreover, they are the future professionals whose role in health promotion can lead to many positive health outcomes.

The **purpose** of this study was to explore dietary habits of nursing students in the area of Athens.

### **Method and material**

The sample studied consisted of 435 Nursing students in Technological Educational Institution of Athens. All participants were invited in their classrooms to participate in the study. Data were collected by the completion of a self report and anonymous questionnaire distributed by the researchers after being informed that all the answers were confidential and given their consent.

The questionnaire consisted of 18 open and closed questions which were included after elaborate review of the literature related to eating patterns and health habits of university students. More in detail, there were included questions regarding the frequency of consumption of fruits, vegetables, legumes, meat, fish as well as questions about the preparation of meals, eating ready meals, alcohol intake, sweets consumption and finally the smoking habits of students. Participants answered these questions according to the following scale: at least one, two, three, four, five, six, seven times a week and rarely. Apart from the above questions, there were also included socio-demographics variables.

The method of the collection of data was a convenience sampling. The study was approved by the Nursing department of TEI.



## Data analysis

The statistical analysis was conducted by the use of the statistical software SPSS 19. All reported p values were compared to a significant level of 5%. Chi-square tests were utilized to identify the relationships between gender and dietary habits of students.

## Limitations of the study

The study sample is not representative in Greece, but a convenience sample. This method of sampling limits the generalizability of the results. Furthermore, the results can not be generalized since are coming from nursing students that have knowledge about health. Another limitation of the present study could be that dietary habits were measured only by self reports.

## Results

The sample studied consisted of 435 nursing students, of whom 16,6% were males and 83,4% females. The study results showed that 69% of the students had a breakfast. 36.1% of the participants reported drinking milk at breakfast, 31.5% reported drinking milk in combination with cereals while 23.9% reported toast and 6.7% butter consumption.

About other liquid intake with breakfast, 17.5% had coffee and 16.1% juice. In terms of fruit consumption, our findings showed that 36.1% of the students consumed fruits daily, while 13.2% of participants consumed 'rarely' or 'never'. 39.2% of the participants consumed vegetables daily while 4.5% reported 'rare' consumption. Regarding the meat consumption rate, 73.8% of students consume meat 2-4 times a week while 17% of students consumed fish 2-3 times a week.

Regarding the consumption of legumes 72.5% of students consumed 1-2 times a week and 14.7% reported 'rarely' or 'not at all' consumption. Fast food consumption was reported by 47.6% of students with frequency 1-2 times a week, while

31.7% of students consumed ready food 'rarely'.

37.7% of the participants reported consumption of sweets with a frequency of 2-3 times per week while of 13.1% reported 'rare' consumption of sweets during the week. Specifically preferences of students are presented in table 1.

80% of the participants reported preparation of food by the mother while 90.3% reported that food was prepared within the family with a frequency of 5-7 times per week.

88.7% of students preferred home-cooked meals and 11.3% preferred ready meals. In regard to the frequency of consumption of ready meals (souvlaki, pizzas and fast food), 58.6% reported 'rare' consumption while 41.4% 'moderate' consumption. Souvlaki was the main preference of meals, in a proportion 64.1% of the students.

Taste was the major determinant for the choice of food. 65.7% of the students choose food based on taste and not based on how healthy it is (Table 1 &2).

From the descriptive analysis, it was found that 33.1% of students used tobacco, of whom 59% started before the age of 17. Finally, 29% did not consume beverages, while 20% of students consumed alcohol with a frequency of 2 -3 times a week (Table 3).

Statistical analysis of the data showed no statistically significant difference between males and females in taking breakfast,  $p=0,411$ . Regarding the preference of the snack from the canteen, the results showed that males often preferred to consume pizza, pastry, toast, cheese, with a statistically significant difference than females,  $p<0,001$ , while there was no statistically significant difference in the 2nd, 3rd and fourth preference,  $p<0,05$ .

Regarding the frequency of consumption of fruits, no statistically significant difference was



found between males and females students,  $p = 0,676$ , while both groups consumed largely fruits 94.4% and 95.6% respectively.

However, eating habits differed significantly in consumption and frequency of green vegetables, higher in females,  $p < 0,001$  and  $p = 0,015$ , respectively. Regarding meat consumption it was found that males consumed meat 'very often' with a statistically significant difference than females,  $p = 0,004$  while no difference was found between the two groups in terms of fish,  $p = 0,179$  and legumes,  $p = 0,308$ .

Female students often had family made food,  $p = 0,013$  while males often ate ready meals outside home,  $p = 0,030$ . No statistically significant difference between groups was found in the type of food when eating outside home,  $p = 0,549$  and in the frequency of consumption of sweets,  $p = 0,686$  (Table 4).

Regarding the consumption of alcoholic beverages males consumed more often than twice a week,  $p = 0,001$  (Table 5).

Male students reported higher use of tobacco, and more specifically, 36.1% of male students reported use of tobacco versus to 32.% of female.

## Discussion

The results of the present study showed that 69% of the students had breakfast, of which 17.5% had coffee with breakfast and 16.1% juice. 36.1% of the students consumed fruits daily, 39.2% consumed vegetables daily, 73.8% consumed meat 2-4 times a week, 72.5% consumed legumes 1-2 times a week, 47.6% consumed fast food and 37.7% consumed sweets. In regard to the frequency of consumption of ready meals (souvlaki, pizzas and fast food), 58.6% of the participants reported 'rare' consumption while 41.4% 'moderate' consumption.

It is widely accepted that university students especially those being away from home, usually

adopt unhealthy dietary habits. More in detail, students in the United States and in Europe after their entry to the university usually experience failure to follow healthy diet especially in terms of fruits and vegetables and meat.<sup>7-10</sup>

Papadaki et al.,<sup>1</sup> who explored the effect of living away from family home on the dietary habits of a group of Greek undergraduate students showed that they decreased their weekly consumption of fresh fruit, cooked and raw vegetables, oily fish, seafood, pulses and olive oil, whereas they increased their sugar, wine, alcohol and fast food intake. Interestingly, in this sample of Greek University students, moving away from family home, assuming responsibility for food preparation and purchasing for the first time seemed to affect their dietary habits. Another equally important factor that exerts a significant negative influence on the consumption of fruit and vegetables, meat and fish is the fact that university students often face limits in their budget. Moreover, it is observed increase in weight and fat gain in students being at first year in university that is mainly attributed to unhealthy diets.<sup>11</sup>

According to Cervera Burriel et al.,<sup>12</sup> university students are in critical period for the development of life styles which important for their future health. The main factors that affect their dietary habits are eating behaviour of other students, alcohol consumption, economic situation and the ability of cooking. Moreno-Gómez et al.,<sup>13</sup> reported that dietary pattern of the university student population was characterized by a low consumption of cereals and tubers, fruits, vegetables, olive oil, legumes and nuts, and a high consumption of processed meat, sweets, snacks, soft drinks and pastries. Likus et al.,<sup>14</sup> who explored dietary habits in first year medical students showed that 25% of students did not eat breakfast, 45.6% snacked in between main meals and 25% ate just before bedtime. Only 29% ate fruit and vegetables daily

and 12% never had fish. Energy drinks were consumed by 39% of students daily and also 40% daily drank sweetened beverages. Irazusta et al.,<sup>15</sup> showed that the energetic intake of the nursing students was deficient including low carbohydrates and high fat and protein. Chen et al.,<sup>16</sup> found that nursing students who skipped breakfast frequently had more negative health promotion behaviors than those who attended breakfast more regularly. These results indicate that school achievement is negatively affected when nursing students omit breakfast.

The results also showed that 80% of the participants reported preparation of food by the mother while 90.3% reported that food was prepared within the family with a frequency of 5-7 times per week. Interestingly, food shopping and preparation plays a significant role on forming dietary habits as well as in planning meals. An alternative solution for students is eating at the canteen. Guagliardo et al.,<sup>11</sup> showed that only one third of students ate regularly at university canteens at midday during the week. Eating regularly at the canteen was associated with increased self-reported consumption of meat, fish, fruit and vegetables, independently of social and demographic variables.

From the descriptive analysis, it was found that 33.1% of students used tobacco, of whom 59% started before the age of 17 years old while 20% of students consumed alcohol with a frequency of 2-3 times a week.

Haddad et al.,<sup>17</sup> showed that the prevalence of smoking among university students was 28.6% (50.2% among males and 6.5% among females). The same researchers also showed friends as the main source of the first smoking, which most often occurred after 15 years of age (82.3%). Similarly, Khader et al.,<sup>18</sup> showed that reported prevalence of current smoking in university students was 35.0% (56.9% for males and 11.4% for females). The most important factors associated with increased smoking were male sex,

higher income, lower academic attainment and higher number of friends or family members who smoke. Chalmers et al.,<sup>19</sup> who explored student nurses' attitudes, beliefs and personal behaviour in relation to tobacco issues showed that 22.1% smoked daily or in social situations. Although 91.4% of the smokers reported that they wanted to quit, few were actively engaged in the quitting process (16.9%). Vitzthum et al.,<sup>20</sup> showed that 41.9% of nursing students were daily or occasional smokers while the majority of smoking students were willing to quit and has already undertaken several attempts. Öztürk et al.,<sup>21</sup> who explored smoking status of nursing students showed that 9.5% were smoking. The difference between smoking ratios of male and female students was significant and increased with increase in the number of friends who smoke. They also showed that smoking mostly increased at times of exams (42.5%).

Students of health sciences courses deserve special attention in relation to smoking because they will become behavioral models conveying the basic concepts of health into the community.<sup>22</sup>

Statistical analysis of the data showed that eating habits differed significantly in consumption and frequency of green vegetables, higher in females. Regarding meat consumption it was found that males consumed meat very often with a statistically significant difference than females. Female students often had family made food while males often ate ready meals outside home. Chourdakis et al.,<sup>10</sup> showed that eating habits differed significantly between the gender in regard to fruit consumption (higher in females) and fast food consumption (higher in males). More in detail, daily fruit consumption was more frequent among females (36.2%) than males (21.9%). Female students had healthier eating habits in terms of daily breakfast intake and meal frequency. Male students reported having physical activity more frequently than females. Fast food consumption occurred more than 3 times a week in 36.9% of males but only in 19.2%



of females. 82.4% of males and 83.2% of females seemed to be aware of the long-term effects of dietary behaviors' on health status. Skemiene et al.,<sup>23</sup> who compared the dietary habits between first-year and third-year medical university students showed that first-year and third-year female students used vegetable oils more frequently, used more vegetables and complied with dietary regimen more often than male students. The same researchers also showed that medical students, especially males, used excessive amounts of animal fat.

Nutrition interventions in university students should be encouraged to promote healthier diets and lifestyles. Equally essential is the achievement of adequate institutional programs aimed at reducing the number of smokers. Indeed, integration of lifestyle programs in nursing education is essential to promote the long-term health of future nurses who will serve as positive patient role models.<sup>24,25</sup>

## Conclusions

According to the findings of the study, nursing students move away from a traditional Mediterranean diet. Health promotion programs should be encouraged in the nursing curriculum in order to establish a healthier life style.

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## ANNEX

**Table 1.** Dietary habits of nursing students

	Dietary habits	N	%
<b>Taking breakfast</b>	Yes	300	69,0
	No	135	31,0
<b>Components of breakfast</b>	Milk	161	37,0
	Coffee	76	17,5
	Cereals	137	31,5
	Juice	70	16,1
	Toast	104	23,9
	Bread/Rusks-Butter	29	6,7
	Bread-Honey-Jam	45	10,3
<b>Snack from home</b>	Yes	41	9,4
	No	394	90,6
<b>1<sup>st</sup> Food preference from school canteen</b>	Pizza/pastry/toast/cheese pie/snack/chips	151	39,2
	Greek koulouri*/sandwich	92	23,9
	Sweets/chocolate/soft drinks /juices	74	19,2
	Water/coffee/fruits/yoghurt	68	17,7
<b>Consumption of outside home food</b>	Rarely	131	30,1
	Once a week	120	27,6
	2 times a week	87	20,0
	3 times a week	44	10,1

	<b>Dietary habits</b>	<b>N</b>	<b>%</b>
	4 times a week	18	4,1
	5 times a week	15	3.4
	6 times a week	3	0,7
	7 times a week	10	2,3
<b>Type of outside home food preference</b>	Fast food	34	9,3
	Greek souvlaki**	234	64,1
	Pizza	55	15,1
	Pizza- Greek souvlaki	42	11.5
<b>Meal preference</b>	Home-cooked	386	34,3
	Outside home	49	65,7
<b>Criterion of meal choosing</b>	Healthy	149	34,3
	Tasteful	286	65,7
<b>Food preparation</b>	Mother	348	80,0
	Others	87	20.0
<b>Frequency</b>	Rarely	5	1,1
	Once a week	2	0,5
	2 times a week	8	11,8
	3 times a week	13	3,0
	4 times a week	14	3,2
	5 times a week	35	8,0
	6 times a week	16	3,7



	Dietary habits	N	%
	7 times a week	341	78,4
<p>Greek koulouri* is a circular <a href="#">bread</a>, typically encrusted with <a href="#">sesame seeds</a></p> <p>Greek souvlaki** popular <a href="#">Greek fast food</a> consisting of small pieces of meat and sometimes vegetables grilled on a <a href="#">skewer</a></p>			

**Table 2** Kind and frequency of food consumption

	Frequency of food consumption	N	%
<b>Fruits</b>	Rarely	56	13,2
	Once a week	52	12,3
	2 times a week	54	12,7
	3 times a week	46	10,8
	4 times a week	36	8,5
	5 times a week	21	5,0
	6 times a week	6	1,4
	7 times a week	153	36,1
<b>Vegetables</b>	Rarely	19	4,5
	Once a week	23	5,4
	2 times a week	48	11,3
	3 times a week	68	16,1
	4 times a week	35	8,3
	5 times a week	44	10,4



	Frequency of food consumption	N	%
	6 times a week	10	2,4
	7 times a week	166	39,2
<b>Legumes</b>	Rarely	50	11,5
	Once a week	152	34,9
	2 times a week	163	37,5
	3 times a week	48	11,0
	4 times a week	6	1,4
	5 times a week	2	0,5
<b>Meat/chicken</b>	Rarely	4	0,9
	Once a week	42	9,7
	2 times a week	101	23,2
	3 times a week	126	29,0
	4 times a week	94	21,6
	5 times a week	36	8,3
	6 times a week	8	1,8
	7 times a week	23	5,3
<b>Fish</b>	Rarely	105	24,1
	Once a week	225	51,7
	2 times a week	64	14,7
	3 times a week	13	3,0
	4 times a week	3	0,7



	Frequency of food consumption	N	%
	5 times a week	1	0,2
	7 times a week	1	0,2
<b>Sweets</b>	Rarely	57	13,1
	Once a week	57	13,1
	2 times a week	74	17,0
	3 times a week	81	18,6
	4 times a week	46	10,6
	5 times a week	32	7,4
	6 times a week	12	2,8
	7 times a week	69	15,9

**Table 3** Health habits of nursing students

	<b>Health habits</b>	<b>N</b>	<b>%</b>
<b>Alcohol use</b>	Rarely	126	29,0
	Once a week	97	22,3
	2 times a week	48	11,0
	3 times a week	40	9,2
	4 times a week	24	5,5
	5 times a week	8	1,8
	6 times a week	5	1,1
	7 times a week	12	2,8
<b>Tobacco use</b>	None	291	66,9
	≤10 /day	71	16,3
	>10/day	73	16,8
<b>Age of first use of tobacco</b>	< 17 years	85	59,0
	>18 years	59	41,0

**Table 4. Dietary habits among male and female nursing students**

Dietary habits			GENDER		p
			MALE	FEMALE	
			n%	n%	
Taking breakfast		NO	21(29,2)	114(31,4)	0,781
		YES	51(70,8)	249(68,6)	
Components of breakfast	Milk	NO	25(34,7)	114(31,4)	0,851
		YES	26(36,1)	135(37,2)	
	Coffee	NO	33(45,8)	191(52,6)	0,180
		YES	18(25,0)	58(16,0)	
	Cereals	NO	31(43,1)	132(36,4)	0,551
		YES	20(27,8)	117(32,2)	
	Juice	NO	44(61,1)	186(51,2)	0,185
		YES	7(9,7)	63(17,4)	
	Toast	NO	29(40,3)	167(46,0)	0,345
		YES	22(30,	82(22,6)	
	Bread/Rusks-Butter	NO	46(63,9)	225(62,0)	0,931
		YES	5(6,9)	24(6,6)	
	Bread-Honey-Jam	NO	43(59,7)	212(58,4)	0,921
		YES	8(11,1)	37(10,2)	
Snack from home		NO	69(95,8)	325(89,5)	0,065
		YES	3(4,2)	38(10,5)	

<b>1<sup>st</sup> Food preference from school canteen</b>	Water-coffee- Fruits- Milk-Yoghurt	13(20,0)	55(17,2)	<b>&lt;0,001</b>
	Sweets- chocolate- Soft drinks- Juices	7(10,8)	67(20,9)	
	Pizza-pastry- toast-cheese pie-snack- chips	39(60)	112(35,0)	
	Greek koulouri* sandwich	6(9,2)	86(26,9)	
<b>Frequency of fruits consumption</b>	Rarely	21(29,6)	87(24,6)	0,676
	Moderate	21(29,6)	115(32,6)	
	Very often	29(40,8)	151(42,8)	
<b>Frequency of vegetables consumption</b>	NO	11(15,3)	10(2,8)	<b>&lt;0,001</b>
	YES	61(84,7)	353(97,2)	
<b>Frequency of meat consumption</b>	Rarely	5(10,9)	41(11,3)	<b>0,004</b>
	Moderate	46(64,8)	275(75,8)	
	Very often	20(28,2)	47(12,9)	
<b>Frequency of fish consumption</b>	Rarely	52(72,4)	278(81,0)	0,179



	Moderate	17(24,6)	65(19,0)	
<b>Frequency of legumes consumption</b>	Rarely	36(51,4)	166(47,3)	0,308
	Moderate	34(48,6)	185(52,7)	
<b>Frequency of outside home food consumption</b>	Rarely	34(47,9)	217(60,8)	<b>0,030</b>
	Moderate	37(52,1)	140(39,2)	
<b>Type of outside home food preference</b>	Fast food	7(11,9)	27(8,8)	0,549
	Greek souvlaki	40(67,8)	194(63,4)	
	Pizza	8(13,6)	47(15,4)	
	Pizza/ Greek souvlaki	4(6,8)	38(12,4)	
<b>Frequency of sweets consumption</b>	Rarely	21(30,0)	93(26,0)	0,686
	Moderate	33(47,1)	168(46,9)	
	Very often	16(22,9)	97(27,1)	
<b>Criterion of meal choosing</b>	Healthy	27(37,5)	122(33,6)	0,306
	Tasteful	45(62,5)	241(66,4)	
<b>Meal preference</b>	Home-cooked	63(87,5)	323(89,0)	0,423
	Outside home	9(12,5)	40(11,0)	

**Table 5.** Health habits among male and female nursing students

health habits		GENDER		p
		MALE	FEMALE	
		n%	n%	
Frequency of Alcohol use	Rarely	28(43,1)	195(66,1)	<b>0,001</b>
	Moderate	37(56,9)	137(38,1)	
Tobacco use	NO	46(63,9)	245(67,5)	0,321
	YES	26(36,1)	118(32,5)	
Cigarettes per day	≤10	13(50,0)	58(49,2)	0,555
	>10	13(50,0)	60(50,8)	
Age of first use of tobacco	<17	19(73,1)	66(55,9)	0.081
	>18	7(26,9)	52(44,1)	