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# Eating strategies in university students, quality of breakfast, and socioeconomic conditions

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## Abstract

**Purpose:** *The purpose of this study was to analyze food strategies, the quality of breakfast and the practice of physical activity in medical students, related to their socioeconomic conditions, and body mass index.* **Methodology:** *This study was a cross-sectional comparative study in 2nd-year students sitting a course in medicine at the University of Mexico. An instrument was developed and validated to collect the variables indicated, which was applied online using the Formstack platform. We used $X^2$ or Fisher's exact and t-test for independent samples or the Mann–Whitney U-test and performed logistic regression.* **Results:** *The logistic regression model indicated that being over 20 years of age, male, obese, and with a low physical activity index were risk factors associated with unhealthy food strategies, with no statistically significant difference. The risk was 41.2-fold in individuals reporting a poor-breakfast quality and six-fold in those who did not eat breakfast. The odds ratio values for insufficient and satisfactory quality of breakfast were at risk, with no statistically significant difference. Not having enough food was a 7.9-fold predictor of risk. Unhealthy food strategies were observed in more than 70% of students with intermediate and inadequate economic resources and in which the average expenditure on food was low.* **Conclusion:** *Healthy eating habits need to be promoted at the Faculty of Medicine, in addition to stressing the importance of a good quality breakfast and engagement in physical activity among students.*

***Keywords:*** *Dietary strategies. Quality of breakfast. University students. Socio-economic status. Body mass index. Physical activity.*

## Introduction

The dietary strategies implemented by individuals and populations have a direct influence on their nutritional status in accordance with their age and gender. Several authors have pointed out that university students are a vulnerable group with regard to diet and physical activity. Moreover, Troncoso et al. and Arroyo et al. emphasize that students in higher education tend to miss meals, especially breakfast, consume a variety of snacks, and engage in little physical activity[1,2]. Various authors have pointed out that a combination of healthy eating and physical activity has a positive impact on an individual's health[3-6]. In light of the foregoing, there is an urgent need to get to know students' nutritional strategies and to evaluate their nutritional status to propose measures to rectify the shortcomings ascertained[7]. This paper, according to Hintze[8], understands food strategies as a set of actions or behavior

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used by individuals to attempt to satisfy their food needs, and not necessarily related to wanting to satisfy their nutritional needs, which point, more than to rational actions guided by norms and values, to possible options related to an individual´s specific conditions. Within the scope of eating strategies, the importance of having a full breakfast on a regular basis has been associated with choosing healthier types of food throughout the day, doing more physical activity, greater intellectual capacity, better academic performance, and greater emotional and psychosocial control[9,10]. A hearty breakfast will provide the daily requirements to ensure an individual performs well both physically and intellectually[11,12]. The relationship between missing breakfast and having a poor quality breakfast with excess weight and obesity in young people and children has been documented[13,14]. As such, the objectives of this study were to analyze the eating strategies, quality of breakfast, and engagement in physical activity in students of Medicine at the University of Mexico, relative to their socioeconomic conditions, and body mass index (BMI).

## Materials and methods

A comparative cross-sectional study was conducted on 108 2nd-year students in 2019. An instrument was developed to collect the variables specified in table 1. The weekly economic resources for expenses at the faculty of medicine (FM) were considered as: adequate from 401 to more than 501, intermediate from 201 to 400, and inadequate from < 100 to 200. Average daily food expenditure was grouped as: adequate from 100 to 200, intermediate from 60 to 99, and inadequate 59 or less, expressed in Mexican pesos. An index with 12 variables was created to classify the "Food Strategies" (Table 1). For the first six strategies, a score was assigned in accordance with the answer (Yes or No), considering whether it corresponded to a healthy (three points) or unhealthy (one point) strategy, and for the following six strategies, given that the variable was collected with five response options, it was classified into three types of strategy: healthy (three points, always and almost always), intermediate (two points, sometimes), and unhealthy (one point, never and almost never). At the end, a total score was calculated with a range of 12-36 points, terciles were calculated to determine cut-off points, and each student was rated in accordance with the score obtained (healthy strategies, intermediate strategies or unhealthy strategies). The highest score was classified as "healthy strategies" and the lowest as "unhealthy strategies". Socioeconomic level (SEL) was created with proxy variables used by the Mexican Association of Market Intelligence and Opinion Agencies AC (AMAI) from 2022 (the father's academic qualifications, if the family has a fully-equipped bathroom, a car, an Internet connection at home, the number of working members in the family and the number of rooms in the house). AMAI scores were high (168 or more), medium (116-167), and low (48-115)[15]. Body Mass Index (BMI), was calculated by dividing the individual's weight by their square height (kg/m$^2$), the values for which were obtained through self-reporting. The cutoff points recommended by the World Health Organization for the adult population were used. Breakfast or the first meal of the day, was classified in accordance with the criteria adapted from the EN-Kid-FEN[16] (This index is used to assess nutritional status and to characterize the eating patterns of children and young people and is drawn up by the Spanish Nutrition Foundation). These criteria for this study were adapted to assess the quality of breakfast pursuant to the food consumption recommendations for the Mexican population[17].

The following considerations were made: breakfast was classified as poor quality when the student ate nothing or only drank coffee and some ultra-processed (UP) cereal; an insufficient breakfast was when at least one food of animal origin or one fruit or vegetable was included, which could be improved if it included two, one food of animal origin or one fruit or vegetable or cereal, and as good quality when it included three, one food of animal origin or one fruit or vegetable and cereal[18]. An index was created to rate physical activity (Table 2). Focus groups and workshops were held to design food strategies. A 24-h reminder was drawn up to ascertain the consumption of food (a record of all the food and drinks consumed the previous day). The instrument was validated (appearance and content) by a team of professionals (epidemiologists, nutritionists, and sociologists) entrusted with judging the relevance of the items in relation to the objectives of the study. The questionnaire was e-mailed to the students using Formstack software. The database was prepared in Excel and the information was processed using the Stata 16 and SPSS 25 programs. Measures of central tendency (mean and median) and dispersion (standard deviation, terciles, and range) were obtained for the numerical variables. Categorical variables were described by means of percentages and analyzed using the $X^2$ or Fisher's exact test. For quantitative variables,

**Table 1.** Food strategy index

| Strategy | | Healthy strategy 3 points | Unhealthy strategy 1 point |
|---|---|---|---|
| E1 | Breakfast | Yes | No |
| E2 | Buy in the cafetería | Yes | No |
| E3 | Buy at nearby stores | Yes | Yes |
| E4 | Buy at outlets at the university | No | Yes |
| E5 | Buy water at the university | Yes | No |
| E6 | Consume other drinks other than those you bring from home (not water) | No | Yes |

| Strategy | | Healthy strategy 3 points | Satisfactory strategy 2 points | Unhealthy strategy 1 point |
|---|---|---|---|---|
| E7 | Take food from your home to the university | Always and almost always | Sometimes | Never and almost never |
| E8 | Bring enough food to the FM | Always and almost always | Sometimes | Never and almost never |
| E9 | Consume other food (not from home) | Never and almost never | Sometimes | Always and almost always |
| E10 | Sacrifice purchase of food | Never and almost never | Sometimes | Always and almost always |
| E11 | Take sufficient drinks | Always and almost always | Sometimes | Never and almost never |
| E12 | Take drinks to the university from home | Always and almost always | Sometimes | Never and almost never |

**Table 2.** Physical activity index

| Physical activity | Level of physical activity | | |
|---|---|---|---|
| | Low | Moderate | High |
| Variable | 1 | 2 | 3 |
| Days of physical activity per week | 0 | 1 of 3 | 4-7 |
| Time spent (mins/day) | 0 | < from 30 to 60 | > 60 |
| Time walked (mins/day) | < 30 | 31 to 60 | > 60 |
| Hours sitting down per day | > 10 | 7 to 10 | < 7 |

Low level of physical activity: 4-8 points, moderate 9-11 points and high 12 points.

comparisons were made according to gender, using the t-test for independent samples or the Mann–Whitney U-test. An alpha value of 0.05 was defined (Table 3). A logistic regression (introduce method) was performed to analyze the influence of the variables specified in table 4 on eating strategies. The dependent variable was: students that adopted healthy and intermediate strategies compared to those using unhealthy strategies. The model was consistent with the results obtained according to the Hosmer and Lemeshow test ($X^2 = 4.059$, gl = 8, $\rho = 0.852$) and was significantly reliable ($X^2 = 43.059$, gl = 17, $\rho < 0.001$).

## Results

The population consisted of 108 students of between 18 and 24 years of age, with a median of 19 years. About 70.4% were female. The most frequent eating strategies were satisfactory in 43.8% of the men and healthy in 42.1% of the female students. About 34.2% and 26.3% of men and women, respectively, registered unhealthy eating strategies, where the differences were not statistically significant. It was ascertained that 37.5% of the men and 25% of the women were overweight and obese, among which unhealthy eating strategies were observed in 54.6% of the men and 35% of the women. Healthy eating strategies were registered in both males (71.4%) and females (75.0%) of normal weight, where the differences were not statistically significant. About 78.1% of the male and 94.7% of the female students registered a low level of physical activity. Unhealthy eating strategies were registered in 91% of the men and 90.3% of the women in this category.

Unhealthy eating strategies were registered in all SELs. Healthy eating strategies were registered in 100% of the students of the medium SELs and 75.0% of the women of the medium and high SELs. A poor quality breakfast was registered in 18.8% of the men and in 10% of the women. Unhealthy eating strategies were registered in 43.4% of the men eating a poor-quality

**Table 3.** Food strategies, sociodemographic, and general characteristics according to gender

| Indicator | Gender | | | | | | | | | | | | | | | | p-value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Men | | | | | | | | Women | | | | | | | | |
| | Food strategy | | | | | | | | | | | | | | | | |
| | Healthy | | Satisfactory | | Unhealthy | | Total | | Healthy | | Satisfactory | | Unhealthy | | Total | | |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | |
| Global | 7 | 22.0 | 14 | 43.8 | 11 | 34.2 | 32 | 100 | 32 | 42.1 | 24 | 31.6 | 20 | 26.3 | 76 | 100 | 0.135 |
| Body mass index | | | | | | | | | | | | | | | | | |
| Low weight | 0 | 0.0 | 0 | 0.0 | 1 | 9.0 | 1 | 3.1 | 0 | 0.0 | 3 | 12.5 | 2 | 10.0 | 5 | 6.6 | 0.079 |
| Normal | 5 | 71.4 | 10 | 71.4 | 4 | 36.4 | 19 | 59.4 | 24 | 75.0 | 17 | 70.8 | 11 | 55.0 | 52 | 68.4 | |
| Oberweight | 2 | 28.6 | 4 | 28.6 | 5 | 45.6 | 11 | 34.4 | 6 | 18.6 | 4 | 16.7 | 4 | 20.0 | 14 | 18.4 | |
| Obesity | 0 | 0.0 | 0 | 0.0 | 1 | 9.0 | 1 | 3.1 | 2 | 6.4 | 0 | 0.0 | 3 | 15.0 | 5 | 6.6 | |
| Total | 7 | 100 | 14 | 100 | 11 | 100 | 32 | 100 | 32 | 100 | 24 | 100 | 20 | 100 | 76 | 100 | |
| Socioeconomic level | | | | | | | | | | | | | | | | | |
| Low | 0 | 0.0 | 3 | 21.4 | 3 | 27.2 | 6 | 19.0 | 8 | 25.0 | 5 | 20.8 | 3 | 15.0 | 16 | 21.0 | 0.952 |
| Medium | 7 | 100 | 4 | 28.6 | 3 | 27.2 | 14 | 43.8 | 12 | 37.5 | 16 | 66.7 | 11 | 55.0 | 39 | 51.3 | |
| High | 0 | 0.0 | 7 | 50.0 | 5 | 45.6 | 12 | 37.4 | 12 | 37.5 | 3 | 12.5 | 6 | 30.0 | 21 | 27.7 | |
| Total | 7 | 100 | 14 | 100 | 11 | 100 | 32 | 100 | 32 | 100 | 24 | 100 | 20 | 100 | 76 | 100 | |
| Commute time from home to the university | | | | | | | | | | | | | | | | | |
| < 1 h | 1 | 14.3 | 1 | 7.1 | 3 | 30.0 | 5 | 16.1 | 13 | 40.6 | 5 | 20.8 | 6 | 30.0 | 24 | 31.6 | 0.067 |
| Between one and 2 h | 4 | 57.1 | 12 | 85.7 | 5 | 50.0 | 21 | 67.7 | 17 | 53.1 | 14 | 58.3 | 7 | 35.0 | 38 | 50.0 | |
| More than 2 h | 2 | 28.6 | 1 | 7.1 | 2 | 20.0 | 5 | 16.1 | 2 | 6.3 | 5 | 20.8 | 7 | 35.0 | 14 | 18.4 | |
| Total | 7 | 100.0 | 14 | 100.0 | 10 | 100.0 | 31 | 100.0 | 32 | 100.0 | 24 | 100.0 | 20 | 100.0 | 76 | 100.0 | |
| Physical activity index | | | | | | | | | | | | | | | | | |
| Low | 4 | 57.1 | 11 | 78.6 | 10 | 90.9 | 25 | 78.1 | 31 | 96.9 | 23 | 95.8 | 18 | 90.3 | 72 | 94.7 | 0.993 |
| Moderate | 3 | 42.9 | 3 | 21.4 | 1 | 9.1 | 7 | 21.9 | 1 | 3.1 | 1 | 4.2 | 2 | 9.7 | 4 | 5.3 | |
| Total | 7 | 100 | 14 | 100 | 11 | 100 | 32 | 100 | 32 | 100 | 24 | 100 | 20 | 100 | 76 | 100 | |
| Quality of breakfast | | | | | | | | | | | | | | | | | |
| Poor | 0 | 0.0 | 2 | 14.3 | 4 | 36.4 | 6 | 18.8 | 2 | 6.3 | 2 | 8.3 | 4 | 20.0 | 8 | 10.5 | 0.029* |
| Insufficient | 1 | 14.3 | 2 | 14.3 | 1 | 9.0 | 4 | 12.5 | 8 | 25.0 | 7 | 29.3 | 4 | 20.0 | 19 | 25.0 | |
| Satisfactory | 2 | 28.6 | 7 | 50.0 | 5 | 45.6 | 14 | 43.7 | 14 | 43.8 | 10 | 41.7 | 12 | 60.0 | 36 | 47.4 | |
| Good | 4 | 57.1 | 3 | 21.4 | 1 | 9.0 | 8 | 25.0 | 8 | 25.0 | 5 | 20.8 | 0 | 0.0 | 13 | 17.1 | |
| Total | 7 | 100 | 14 | 100 | 11 | 100 | 32 | 100 | 32 | 100 | 24 | 100 | 20 | 100 | 76 | 100 | |

*(Continues)*

**Table 3.** Food strategies, sociodemographic, and general characteristics according to gender *(continued)*

| Indicator | Gender | | | | | | | | | | | | | | | | p-value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Men | | | | | | | | Women | | | | | | | | |
| | Food strategy | | | | | | | | | | | | | | | | |
| | Healthy | | Satisfactory | | Unhealthy | | Total | | Healthy | | Satisfactory | | Unhealthy | | Total | | |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | |
| Economic resources for expenditure at the Faculty of Medicine | | | | | | | | | | | | | | | | | |
| Adequate | 2 | 28.6 | 4 | 28.6 | 3 | 30.0 | 9 | 29.0 | 3 | 9.4 | 5 | 20.8 | 5 | 26.4 | 13 | 17.3 | 0.439 |
| Satisfactory | 4 | 57.1 | 5 | 35.7 | 4 | 40.0 | 13 | 42.0 | 9 | 28.1 | 6 | 25.0 | 7 | 36.8 | 22 | 29.3 | |
| Inadequate | 1 | 14.3 | 5 | 35.7 | 3 | 30.0 | 9 | 29.0 | 20 | 62.5 | 13 | 54.2 | 7 | 36.8 | 40 | 53.3 | |
| Total | 7 | 100 | 14 | 100 | 10 | 100 | 31 | 100 | 32 | 100 | 24 | 100 | 19 | 100 | 75 | 100 | |
| Average expenditure on food per day | | | | | | | | | | | | | | | | | |
| Adequate | 0 | 0.0 | 2 | 15.4 | 0 | 0.0 | 2 | 7.1 | 2 | 8.0 | 0 | 0.0 | 0 | 0.0 | 2 | 3.3 | 0.5 |
| Satisfactory | 2 | 33.3 | 6 | 46.2 | 2 | 22.2 | 10 | 35.7 | 4 | 16.0 | 1 | 5.6 | 3 | 18.8 | 8 | 13.4 | |
| Inadequate | 4 | 66.7 | 5 | 38.4 | 7 | 77.8 | 16 | 57.2 | 19 | 76.0 | 17 | 94.4 | 13 | 81.2 | 49 | 80.3 | |
| Total | 6 | 100 | 13 | 100 | 9 | 100 | 28 | 100 | 25 | 100 | 18 | 100 | 16 | 100 | 61 | 100 | |
| Satisfied with what you eat before getting home | | | | | | | | | | | | | | | | | |
| Never | 0 | 0.0 | 0 | 0.0 | 2 | 22.2 | 2 | 6.9 | 2 | 6.3 | 0 | 0.0 | 2 | 11.1 | 4 | 5.4 | 0.002* |
| Almost never | 0 | 0.0 | 6 | 42.9 | 2 | 22.2 | 8 | 27.6 | 6 | 18.8 | 9 | 37.5 | 12 | 66.7 | 27 | 36.5 | |
| Almost always | 4 | 66.7 | 6 | 42.9 | 3 | 33.3 | 13 | 44.8 | 18 | 56.3 | 12 | 50.0 | 4 | 22.2 | 34 | 45.9 | |
| Always | 2 | 33.3 | 2 | 14.3 | 2 | 22.2 | 6 | 20.7 | 6 | 18.8 | 3 | 12.5 | 0 | 0.0 | 9 | 12.2 | |
| Total | 6 | 100.0 | 14 | 100.0 | 9 | 100.0 | 29 | 100.0 | 32 | 100.0 | 24 | 100.0 | 18 | 100.0 | 74 | 100.0 | |

Source: The author. The food strategies regarding the degree of satisfaction with what the students eat before getting home, as well as the quality of their breakfast, illustrated statistically significant differences in accordance with gender (*p<0.05); however, there were several boxes with expected values of < 5.

**Table 4.** Logistic regression. Unhealthy eating strategies

| Unhealthy eating strategies | 95% confidence interval for OR | | | |
|---|---|---|---|---|
| | B (ES) | Lower limit | OR | Upper limit |
| Intercept | –3.941 (1.611) | | | |
| Variable | | | | |
| Age (reference: 18-19 years) | | | | |
| 20-21 years | 0.223 (0.650) | 0.350 | 1.249 | 4.465 |
| 22-24 years | 1.085 (1.284) | 0.239 | 2.961 | 36.676 |
| Gender (reference) | | | | |
| Men | 0.904 (0.723) | 0.598 | 2.469 | 10.193 |
| Socio-economic level (reference: High) | | | | |
| Low | –0.044 (0.906) | 0.162 | 0.957 | 5.650 |
| Medium | –1.559 (0.779) | 0.046 | 0.210* | 0.968 |
| Physical activity index (reference: Moderate) | | | | |
| Low | 0.245 (1.013) | 0.175 | 1.278 | 9.306 |
| Time taken commuting to the university | | | | |
| More than 2 h | –1.062 (1.218) | 0.032 | 0.346 | 3.767 |
| Between one and 2 h | –1.968 (0.911) | 0.023 | 0.140* | 0.833 |
| Breakfast (reference: Yes) | | | | |
| No | 1.794 (0.709) | 1.498 | 6.014* | 24.140 |
| Quality of breakfast (reference: Good) | | | | |
| Poor | 3.717 (1.523) | 2.081 | 41.161* | 813.950 |
| Insufficient | 1.700 (1.373) | 0.371 | 5.472 | 80.639 |
| Satisfactory | 2.297 (1.207) | 0.932 | 9.939 | 105.945 |
| Satisfaction (reference: Yes) | | | | |
| No | 2.065 (0.693) | 2.026 | 7.885* | 30.687 |
| BMI category (Reference: Normal weight) | | | | |
| Obesity | 1.291 (1.113) | 0.411 | 3.635 | 32.185 |
| Overweight | –0.240 (0.806) | 0.162 | 0.786 | 3.816 |
| Underweight | 0.571 (1.408) | 0.112 | 1.770 | 27.962 |

Source: The author B (ES): coefficient B and its respective standard error; OR: odds ratio; FM: faculty of medicine; BMI: body mass index. $R^2 = 0.342$ (Cox and Snell), 0.500 (Nagelkerke). Model $X^2 = 43.059$, $\rho < 0.001$. *$\rho < 0.05$. A poor quality of breakfast, dissatisfaction with food consumed before getting home and missing breakfast altogether were clear risk factors associated with unhealthy eating strategies, while a commute time of one to 2 h and having a medium SEL were protective factors for presenting these strategies.

breakfast and in 60% of the women eating a satisfactory breakfast. Healthy eating strategies were registered in 57.1% of the men reporting a good quality breakfast and in 68.8% of the women with a good and satisfactory breakfast. About 66.7% of the women with unhealthy eating strategies said that they were almost never satisfied with what they ate for breakfast, and 33.3% of the men said that they were almost always satisfied with this meal. About 73.6% of the women and 70% of the men with unhealthy eating strategies were found to have satisfactory and inadequate economic resources, and the same figures were registered in 81.2% of the female and 77.8% of the male students whose average expenditure on food was low (Table 3). The logistic regression model explained between 34.2% and 50% of the variance in eating strategies showed that the total prediction was correct at 81.6%, and, in addition, correctly predicted 90.8% of the students with healthy eating strategies and 55.6% of those with unhealthy eating strategies. This model pointed out that being over 20 years of age, male, obese, and with low levels of physical activity were risk factors for unhealthy eating strategies, but where the differences were not statistically significant. Furthermore, unhealthy eating strategies were registered in individuals eating a poor quality breakfast 41.2 times more than students eating a good quality breakfast. The risk was 6 times more in students that miss breakfast compared to those that have breakfast. The odds ratio (OR) values of the inadequate and satisfactory breakfast variables resulted in a risk, although the differences were not statistically significant. Not having enough food was a risk predictor variable

for having 7.9 times unhealthier eating strategies in relation to individuals with enough food. Individuals from an intermediate SEL and with a home to university commuting time of between one and 2 h were protective factors (Table 4).

## Discussion

We believe that this study has succeeded in characterizing the eating strategies of the medical students, as 26.3% of the women and 34.2% of the men registered unhealthy eating strategies. In this case, the strategies correspond to behavior caused by the immediate cultural, advertizing, and socioeconomic environment, in an insensitive but socially imposed manner, whereby the ability of individuals to choose their food is limited by the availability thereof and in accordance with the financial resources available to them. This paper illustrates that almost two out of ten students were from a low SEL, of which 15% and 27.2% of the female and male students, respectively, had unhealthy eating strategies. However, these unhealthy eating strategies were also observed in students from a high and medium SEL (Table 3), which supports the fact that in addition to money, the environment is essential for the adoption of healthy eating strategies. University students pass from late adolescence to the early adulthood, a critical period, according to Winpenny, for the development of eating strategies, which prevail in adulthood[19]. Durán mentions that this stage, in which young people acquire independence, is when they develop strategies on how, what, where, when, and with whom to eat[20]. Moreover, most university students tend to adopt unhealthy eating habits at this time. In this regard, Pi y Cols. point out that prolonged fasting occurs and the excessive consumption of UP food becomes more frequent[21,22]. This research work demonstrates that more than a third of the men and a quarter of the women were overweight and obese. This was found in 32.8% of male and 24.5% of female Chilean students[20] and in 38% of Honduran students[23], percentages similar to those found in this study. The 2021 National Health and Nutrition Survey (ENSANUT) reported that 57.6% of men and 55.6% of 20-29 years olds were overweight or obese[24]. This study ascertained unhealthy eating strategies in 54.6% of men and 35% of women who were overweight or obese, and in 91% of men and 90.3% of women with a low physical activity index. This paper was written before the implementation of the confinement measures arising from the COVID-19 pandemic. Literary references have pointed out that excessive malnutrition and a lack of physical inactivity increases the risk of obesity and other metabolic diseases in the university population[20,25]. Missing breakfast and having a poor breakfast quality were statistically significant predictors of risk with respect to adopting unhealthy eating habits. About 40.7% of the students said that they did not have breakfast before leaving home. About 75% of them reported the main reason for not having breakfast as a lack of time. About 36.4% of the students and 20% of the female students ate a poor quality breakfast, which allows us to deduct that this percentage of young people is at risk of developing obesity and other metabolic diseases in adulthood and of performing poorly academically, among other disadvantages[13,26]. Not eating enough food at the FM before getting home was also a statistically significant predictor of risk with respect to unhealthy eating habits. In this regard, the food that more than a third of the students took to the FM from home was not enough, almost half of them reported a lack of economic resources to acquire it and the provision of healthy and accessible food at the FM is limited. Women registered better strategies despite having fewer resources. The main limitation of this work was the small size of the sample and the fact that it was not obtained on a probabilistic basis. However, the results have enabled us to affirm that in addition to economic issues, the university environment promotes unhealthy eating strategies among medical students.

## Conclusion

This work provides inputs to conduct studies on a larger scale and to reinforce programmes for the promotion of healthy eating, particularly to promote the consumption of a hearty, good-quality breakfast. Work needs to be carried out geared to improving students´ eating strategies, as this entails potentially modifiable behavior. The lack of choice at the FM with regard to having a full breakfast and the availability of a wide range of UP food does not foster a healthy environment that should be essential at a university. Initiatives to promote healthy eating habits and to encourage Physical activity on a routine basis, such as sports supervized by professionals and access to appropriate exercise equipment on the university campus, require a firm political commitment, both from the authorities of the Faculty and the University.

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**Data confidentiality.** The authors declare that they have complied with the protocols of their workplace regarding the publication of patient data.

**Right to privacy and informed consent.** The authors have obtained the informed consent of the patients and/or subjects referred to in the article. This document is in the possession of the corresponding author.

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