

Determination of cholesterol and triglycerides and eating habits in foreign and local students

Determinación de colesterol y triglicéridos y hábitos alimentarios en estudiantes foráneos y locales

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Abstract

Objective: To determine the difference in eating habits in foreign and local students of the Faculty of Chemical Biological Sciences (UAC), through the analysis of serum levels of cholesterol and triglycerides. Methodology: A descriptive study was carried out with 30 students between 18 and 23 years of age from the Autonomous University of Campeche of the Q.F.B educational program in the state of Campeche. Results: The cholesterol levels of foreign men are 163.5 and in the locals it is 136.8; having a difference of 26.7. In the female gender, foreigners have an average of 137.13 and locals one of 135.78; having a difference of 1.35, a smaller difference compared to men. In triglyceride levels, local women have the highest triglyceride levels compared to foreign women, obtaining a difference of 14.2. In men, foreigners are the ones that contain the highest serum levels, having a difference of 17.7 with the triglyceride levels of local men. With respect to this parameter, men are the ones most associated with hypertriglyceridemia disorders.

Cholesterol, Triglycerides, Eating habits, Students

Resumen

Objetivo Determinar la diferencia de hábitos alimenticios en los estudiantes foráneos y locales de la Facultad de Ciencias Químico-Biológicas (UAC), mediante el análisis de los niveles séricos de colesterol y triglicéridos. Metodología: Se realizó un estudio descriptivo con 30 estudiantes entre los 18 y 23 años de la Universidad Autónoma de Campeche del programa educativo de Q.F.B en el estado de Campeche. Resultados: Los niveles de colesterol de hombres foráneos son de 163.5 y en los locales es de 136.8; teniendo una diferencia de 26.7. En el género femenino las foráneas tienen una media de 137.13 y las locales una de 135.78; teniendo una diferencia de 1.35, una diferencia menor en comparación con los hombres. En los niveles de triglicéridos las mujeres locales tienen los niveles de triglicéridos más elevados en comparación con las foráneas, obteniendo una diferencia de 14.2. En los hombres los foráneos son los que contienen los niveles séricos más altos teniendo una diferencia de 17.7 con los niveles de triglicéridos de los hombres locales. Con respecto a este parámetro los hombres son los que se encuentran más asociados a trastornos de hipertrigliceridemia.

Colesterol, Triglicéridos, Hábitos alimenticios, Estudiantes

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Introduction

Adolescence is the period in which dietary habits are established, taste matures, preferences and temporary or definitive aversions are defined, constituting the basis of eating behaviour for the rest of life. At this stage, environmental, family, cultural and social conditions have an important influence on the definition of the nutritional personality, on which the nutritional status will depend.

Adolescence is characterised as a period of physical and mental maturation; consequently, nutritional requirements at this stage increase and vary according to sex and individual. Common eating problems in adolescents can lead to overweight and obesity; these disorders can be caused by sedentary lifestyles and lifestyle changes. Other causes relate to the fact that this age group is subjected to rigid school schedules and extracurricular activities. Some young people - of low socio-economic level - use their scarce economic resources to cover the minimum family needs, which sometimes leads to the omission of some meals, especially breakfast, a situation that favours the presence of poor dietary habits (Castañeda et al.).

The prevalence of overweight and obesity has increased markedly in the last two decades. This is particularly due to the fact that obesity can be linked to various conditions such as hypertension, diabetes and atherosclerotic disorders, with a prevalence in adolescents and young people between 18 and 23 years of age. An important problem related to young people's eating habits is the metabolic syndrome which is a complex interrelationship of risk factors for cardiovascular disease and diabetes mellitus (DM). These factors include: elevated triglyceride levels, decreased levels of high-density lipoprotein cholesterol (HDL-cholesterol) and obesity.

Plasma lipid profile values are the result of complex metabolic processes influenced by genetic and environmental factors, cardiovascular problems and poor dietary habits. Several studies have shown that abnormal lipid profile levels are completely associated with the type of diet in daily life, with young people being the most affected (Díaz et al.).

Methodology to be developed

To achieve the proposed objective, a descriptive study was carried out with 30 students between 18 and 23 years of age from the Universidad Autónoma de Campeche of the Q.F.B. educational programme in the state of Campeche.

The students were interviewed at the University in one of the laboratories; weight and height measurements were taken to calculate the body mass index according to the World Health Organization and the World Health Organization; waist circumference measurements were also taken to determine health risks according to their size; the results were compared with the International Diabetes Federation, IDF and ESNA 2000.

Venous blood samples were taken under adequate aseptic conditions after a 12-hour fast; this procedure was carried out under the stipulations of NOM- 007- SSA- 2011. Measurements of serum total cholesterol and triglycerides were carried out by automated analysis on Mindray BS-120 Chemistry Analyter. All determinations were analysed in a clinical analysis laboratory at the university facilities, under the aforementioned standard.

The following values were used as reference to interpret the results obtained:

Cholesterol determination:

Less than 200 mg/dL: Normal

200 - 239: Moderate

240 or more: High

Triglyceride determination:

Males: 40 - 160 mg/dL

Women: 35 - 165 mg/dL

From a bioethical point of view, informed consent was requested from all students and all students agreed to participate in the research.

Results

The distribution of the students consisted of 30 students; 50 % belonged to the group of foreign students and 50 % belonged to the group of local students; 60 % were female and 40 % were male.

It was observed that only 27 % of the patients analysed had high triglyceride levels; in the case of cholesterol only 3 % of the patients had moderate levels (95 mg/dL).

Further statistical analysis showed that foreign men have a very high prevalence of body mass indexes, having the highest body mass indexes; the same is true for cholesterol and triglycerides, which have the highest serum levels (Figure 1).

Determinants	Gender	average	Standard deviation	Minimum	Maximum
height	female	1.56	0.049	1.49	1.63
	man	1.715	0.095	1.62	1.88
size	female	81.25	8.51	64	90
	man	105.83	17.66	87	126
weight	female	58.89	9.63	44.2	71.2
	man	92.4	25.5	66.9	128
Body mass index	female	24.18	3.83	19.91	29.68
	man	31.04	6.34	24.87	41.42
cholesterol	female	137.13	22.38	112	171
	man	163.5	34.4	138	217
triglycerides	female	111.8	54.7	67	212
	man	142.7	67.9	66	249

Figure 1 Determinants of variables in study of foreign students

With regard to the results obtained from the analysis of the local students, it was observed that, in the body mass index, men have the highest indices with a difference of 2.57 in comparison with the female gender; with regard to serum levels, it was obtained that there is only a difference of 1.02 in the levels between men and women, with men having the highest levels. In the case of triglycerides, a very significant finding was that women had higher levels than men, although there was only a difference of 1.0 compared to men (Figure 1).

With respect to foreign males, it was observed that the BMI was higher than local students and in the case of the female gender, it was the local female students who had a higher BMI compared to the foreign female students (Figure 2).

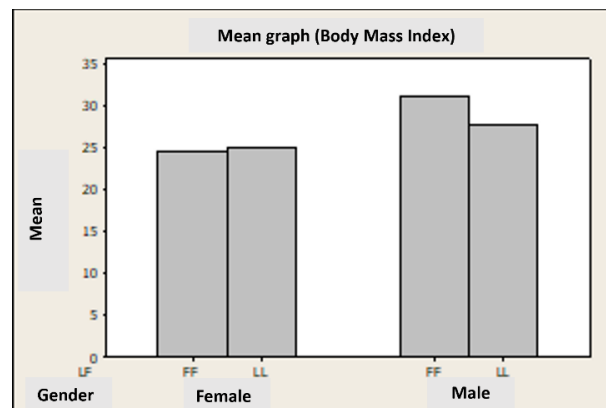


Figure 2 BMI comparison. LL: Local; FF: Foreign

Likewise, cholesterol is more prevalent in foreign students, with foreign men having the highest serum levels. Based on the analysis of the data, it was determined that the cholesterol levels of foreign men are 163.5 and local men 136.8, with a difference of 26.7. In the female gender, foreigners have a mean of 137.13 and locals 135.78, with a difference of 1.35, a smaller difference compared to men.

Determinants	Gender	average	Standard deviation	Minimum	Maximum
height	female	1.5411	0.0506	1.49	1.65
	man	1.7333	0.1179	1.6	1.91
size	female	83	10.86	70	107
	man	95	13.4	77	112
weight	female	59.64	11.52	44.3	81.3
	man	84.08	19.16	55	104
Body mass index	female	25.07	4.35	18.68	31.21
	man	27.64	3.55	20.96	31.1
cholesterol	female	135.78	27.46	95	170
	man	136.8	26.4	109	180
triglycerides	female	126	78.8	43	256
	man	125	81	81	176

Figure 3 Determinations of variables in local student studies

In the case of triglyceride levels, something very different happens with respect to cholesterol; it can be observed that local women have higher triglyceride levels than foreign women, with a difference of 14.2. In the case of men, it can be observed that foreign men have the highest serum levels, with a difference of 17.7 compared to the triglyceride levels of local men (Figure 1 and 3).

With all of the above, it can be determined that cholesterol and triglyceride content varies in both locals and foreigners, with foreigners having a prevalence of elevated cholesterol levels.

Conclusions

Determinations of cholesterol and triglycerides for a comparison of dietary habits between foreign and local students indicate that consumption of high fat foods can vary serum content and is linked to the variant of being a foreigner, in the case of cholesterol levels; with men having the highest levels, this can be attributed to women secreting oestrogen, which is a hormone that acts as a cardiovascular protector, helping to regulate cholesterol levels and increasing the concentration of HDL (high density lipids), although it should be borne in mind that hypercholesterolaemia disorders are more associated with women. With respect to triglyceride levels, it is distributed for the female gender in local female students and for the male gender in local male students; with respect to this parameter, men are the ones who are more associated with hypertriglyceridaemia disorders.

In conclusion we can determine that bad eating habits are completely associated with foreign students, this is because their consumption of fats and carbohydrates is determined by the consumption of foods known as fast food and the nightly intake of large quantities of junk food; but one of the important points that triggers the levels of cholesterol and triglycerides is associated with not consuming foods with high nutritional intake at breakfast, taking into account that breakfast is the main meal.

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