

FAST-FOOD EATING HABITS CORRELATED WITH THE LIPID PROFILE CHARACTERISTICS AT TEENAGERS

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Abstract

In the last two decades it was found that, in Europe as well as in Romania, the consumption of so-called "fast-food" increased greatly. Excessive consumption of such foods is associated with an increased risk of metabolic syndrome and cardiovascular diseases. In this study we aimed to investigate the association between frequent consumption of fast-food and the characteristics of the lipid profile at adolescents. The study included 180 students, aged between 14-18 years, divided into two groups; the study group - consisting of 64 subjects (included teenagers who frequently eat fast-food, at least 3 times / week) and the control group - consisting of 116 subjects who consume fast-food occasionally (maximum once / week). A questionnaire on eating behavior was used. The lipid profile of teenagers was determined by quantification of total cholesterol, HDL cholesterol and triglycerides values. The prevalence of pathologic values of lipid parameters was significantly higher in the study group than in the control group ($p < 0.001$). Dyslipidemia is one of the main risk factors for hypertension and other diseases. By limiting the fast-food consumption in adolescents, it can be ensured the effective prevention of cardiovascular disease.

Key words: teenagers, fast-food, lipid profile, dyslipidemia

INTRODUCTION

Frequent consumption of fast-food has become a widespread habit among adolescents and is continuously growing (Bauer et al., 2009). The important role of nutrition in preventing the development of many diseases is well known (Hotoleanu et al., 2009) and the correlation between unhealthy food consumption and health status suggests their contribution to a variety of diseases such as obesity, dyslipidemia, diabetes, all with major risk in the occurrence of cardiovascular diseases (Jaworowska et al., 2013; WHO, 2011).

These risk factors cause atherosclerosis in the coronary and cerebral blood vessels, a process that evolves over a longer period, starting from childhood, but which manifests itself in middle-aged (Constandachea et al., 2013; WHO, 2011).

Dyslipidemia is one of the most important independent risk factors for acute myocardial infarction (Yusuf et al., 2004). The excessive consumption of saturated fat and cholesterol, along with smoking and overweight / obesity is considered a risk factor in the production of dyslipidemia in children and adolescents, regardless of family history (AAP, 1998).

The caloric energy of a traditional fast-food meal covers 47.47% of a required 8400 kJ /day, while the fat ratio needed for a day is between 47.08% and 93.48% (Brindal et al., 2008). Dyslipidemia favors atherogenesis and therefore increases the risk of cardiovascular disease (Hoenig et al., 2008; Caramana et al., 2008; Radu et al., 2014).

The early detection of individuals at risk for atherosclerosis requires a complete assessment of the risk factors predisposing to cardiovascular diseases. (Stoicescu et al., 2011; Stoicescu et al., 2012).

Although several studies suggest a negative influence of fast-food consumption. The conclusions about its specific effects on health are currently limited.

Therefore the aim of this study was to determinate the presence and prevalence of various changes in lipid profile in adolescents from Bihor county, depending on the type of food eaten.

MATERIAL AND METHOD

A total of 372 adolescents, aged 14-18 years, were in this study. A part of them were interviewed with the consent of their parents and schools, on eating habits, smoking, family history and related lipid profile and there were performed auxological measurements (weight, height, BMI). The other part has completed the same questionnaire posted in a closed group, on a social network.

Personal data were confidential. Of the total number of young people interviewed or who has completed the questionnaire, the data were processed as follows:

- 192 were eliminated from the study; the exclusion criteria were: incomplete information, smoking, obesity and overweight or positive family history;
- the other 180 were divided into two groups: 64 subjects who frequently eat fast-food products, at least 3 times / week, hereinafter called "study group" and 116 subjects who consume maximum once / week, hereinafter called "control group".

The ratio male / female was 1.2:1 (53.89% vs. 46.11%); the gender distribution in the two groups is presented in table 1.

Table 1

The gender distribution in the two groups

Sex	Study group		Control group	
	No.	%	No.	%
Male	36	56.25	61	52.59
Female	28	43.75	55	47.41
Total	64	100	116	100

Age-distribution in the two groups is shown in figure 1.

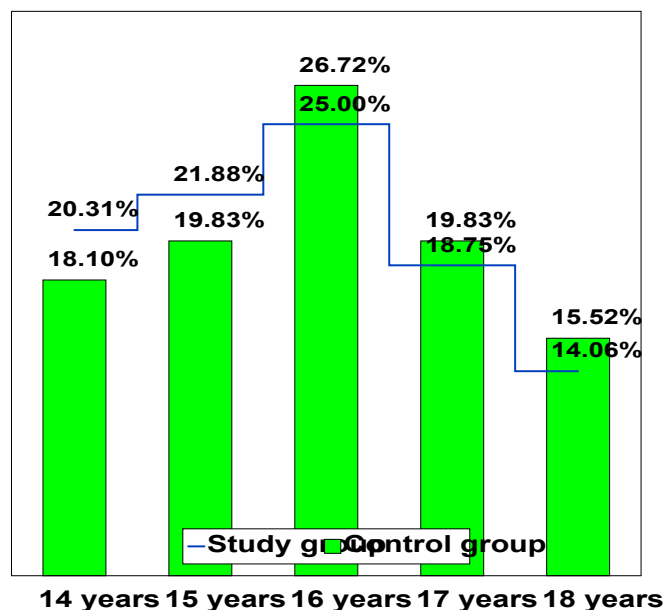


Fig.1. Distribution according to age

RESULTS AND DISCUSSION

All the participants included in this study were asked to make the necessary analysis, in a specialised laboratory, to find out their own lipid profile.

The lipid profile of these students was determined by performing the following serum determinations: total cholesterol (mg/dL), HDL cholesterol (mg/dL), and triglycerides (mg/dL). The method used in the laboratory for this type of analysis is a colorimetric spectrophotometric one, performed on Hitachi 917 automatic analyzer.

The interpretation of results was done by reference to normal values for this age group, taking into account the data found in the literature (Betteridge et al., 1999). The limits of the values (the ranges) that were considered are recorded in table 2.

Table 2

Limit values		
Total cholesterol (mg/dL)	HDL-cholesterol (mg/dL)	Triglycerides (mg/dL)
< 170 – normal values	≥ 40 – normal values	< 150 – normal values
170-200 – borderline values	< 40 –pathological values	150-200 – borderline values
> 200 – pathological values	-	> 200 – pathological values

The results obtained from the comparative analysis of the lipid display values between the two groups are showed in table 3.

Table 3

Results obtained from the comparative analysis of the lipid display values

Measured parameters	Study group			Control group		
	Girls	Boys	Total	Girls	Boys	Total
Cholesterol 170-200 mg/dL	4	7	11	2	8	10
Cholesterol > 200 mg/dL	2	4	6	1	3	4
HDL-cholesterol < 40 mg/dL	1	4	5	1	2	3
Triglycerides 150-200 mg/dL	2	7	9	1	6	7
Triglycerides > 200 mg/dL	1	4	5	0	2	2

The prevalence of pathologic values in the case of lipid parameters was significantly higher in the study group than in the control group ($p < 0.001$) (figure 2).

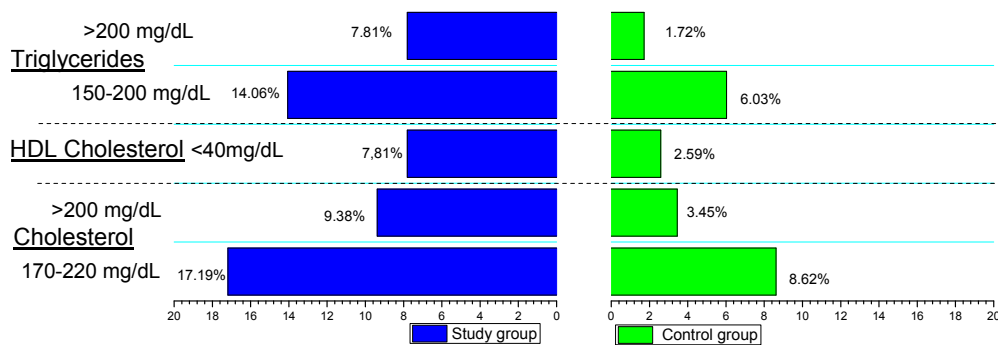


Fig. 2. The prevalence of abnormal values of measured lipid parameters

The comparative reporting between the two groups of individual values to the normal values showed a change in lipid parameters, measured in both groups, with a prevalence significantly higher ($p < 0.001$) among adolescents who frequently eat fast-food.

Thus, compared to the control group, in the study group were recorded values above normal total cholesterol to 26.57% vs. 12.7, 21.87 vs. 7.75 in the case of triglycerides, and the values were 7.81 vs. 2.59 for HDL cholesterol.

From statistical point of view, it can be established a significant difference between the levels of total cholesterol and triglyceride (increased), and the level of HDL cholesterol (decreased) at adolescents who frequently eat fast-food versus the adolescents who consume such type of foods occasionally; this fact indicates the presence of an atherogenic profile associated with unhealthy eating habits.

It was also observed a higher frequency of fast-food consumption among adolescent boys, this being correlated with a higher prevalence of dyslipidemia.

CONCLUSIONS

This study demonstrated the obvious correlation between the levels of total cholesterol, triglycerides and HDL cholesterol, in the cases of adolescents that have unhealthy eating habits.

Given the high consumption of fast-food related to adolescents, the most important conclusion which emerges is that becomes a necessity and a priority also to promote health through an intensive education, that can guide the young people to adopt healthier habits.

It is well known that dyslipidemia is one of the main risk factors for cardiovascular disease and hypertension. The delay and the occurrence of future cardiovascular disease in adulthood can be prevent by the limitation and rationalization of fast-food consumption in the teenage years.

Several specialized psychosocial intervention strategies showed positive effects on cardiovascular risk factors. The psychosocial interventions and adding psychological educational components to the standard cardiological care, can help to improve the quality of life and significantly reduce the risk factors.

Diet is an integral part of the cardiovascular risk management, as it can be seen from this paper. People exposed to a high risk of disease should receive expert advice on food and composition. Also, a proper guidance on how to choose an optimal diet (type of foods) reduces the cardiovascular risks. A varied and balanced diet in terms of calories, with a regular program of physical exercises (avoiding sedentary lifestyle) is essential in maintaining cardiovascular health.

The recommendations regarding diet should be individualized according to the personal risk factors - dyslipidemia, hypertension, diabetes, and obesity. Promoting a healthy lifestyle is the shared responsibility of parents, the obligation of the teachers and of the health professionals, and has to be a priority in the agenda of the politicians. So, it involves after all the whole society.

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