ALCOHOL CONSUMPTION AND BODY MASS INDEX

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REZUMAT

Depăşirea greutăţii optime şi obezitatea au atins în întreaga lume proporţii epidemice. Un comportament cu risc pentru sănătate şi foarte popular, în special la tineri, consumul de alcool, pare a fi asociat cu greutatea corporală. Prezentul studiu a utilizat o parte a chestionarului CORT 2004 pentru a căuta potenţialele corelaţii între frecvenţa şi intensitatea consumului de alcool şi indicele de masă corporală (IMC) la tinerii (cu vârsta între 18 şi 26 ani) din judeţul Timiş. Atât intensitatea cât şi frecvenţa consumului de alcool au fost corelate semnificativ din punct de vedere statistic cu IMC-ul, dar efectul lor cantitativ a fost redus. Cu toate că este important să fie redus consumul de alcool la tineri pentru efectele pozitive asupra patologiei rezultate din consumul de alcool, această măsură poate să ducă şi la mici scăderi ale greutăţii corporale.
Cuvinte cheie: indice de masă corporală, consum de alcool, tineri

ABSTRACT

Overweight and obesity have reached epidemic proportions all over the world. A very popular risk behavior, especially among young people, alcohol consumption, seems to be associated to the body weight. The present study used a part of CORT 2004 questionnaire to search for potential correlations between the frequency and intensity of alcohol consumption and the body mass index (BMI) in young people (18 to 26 years old) from Timis County. Both the intensity and the frequency of alcohol consumption were statistically significant correlated to BMI, yet their quantitative effect was small. Although it is important to decrease the consumption of alcohol in the young people for the positive effects on the alcohol induced pathology, this may lead to a small decrease in body weight as well.
Keywords: body mass index, alcohol, young people

INTRODUCTION

In the entire world the number of overweight and obese persons reached epidemic proportions. High body weight is associated to different health problems, as for example diabetes, cardiovascular diseases, different types of cancer, etc., and is also associated to increased medical expenditures. The alcohol consumption is not recognized as a certain direct contributor to weight gain and to the risk of obesity.

In the year 2000, the alcohol consumption caused 3.2% deaths (1.8 millions) in the entire world, and 4% of the global pathology

[1]. The proportion of the pathology attributable to alcohol consumption in developing countries is between 2.6% and 9.8% of total pathology for men and between 0.5% and 2.0% of total pathology for women [2]. Besides the direct toxic effects of intoxication and addiction, alcohol use causes about 20% to 30% of each esophageal cancer, liver disease, homicide, epileptic seizures, and motor vehicle accidents worldwide. It also increases the risk of cardiovascular disease, risk of disease during pregnancy, depressions, and alcohol consumption is a factor that prevents the normal function of the individual in society [3].

From the point of view of energetic density, alcohol represents the second nutrient (7calories/g alcohol) after dietary fat. Short-term metabolic studies have shown that alcohol stimulates appetite and food intake, leading to elevated 24-hour energy intake. Besides the high caloric content, alcohol is usually associated with sedentary activities, such as watching TV and participating (as public!) in sports events, that also promotes gaining weight. Alcohol also stimulates metabolism, which can lead to overeating. One study suggests that the number of people present at a meal is positively correlated with the quantity of food consumed and that the association is stronger when alcohol is involved [4]. In addition, alcohol inhibits the body's ability to burn fat. The liver converts alcohol into acetate, which is released into the blood stream and used by the body as an energy source. As acetate levels rise, the body begins to burn more acetate and less fat [5].

Numerous studies show gender differences in alcohol consumption and the associated consequences. Men consume more alcohol, are less likely to abstain, and suffer more consequences as a result of their drinking. These differences are partially rooted in basic biology. On average, female bodies contain higher amounts of lipids and lower amounts of water than male bodies, so the same amount of alcohol consumed per unit body weight in the same time period results in a higher blood alcohol level in women than in men. Before the alcohol reaches the bloodstream, gastric alcohol dehydrogenase (ADH) isozymes begin the metabolism process in the stomach. Women have relatively lower levels of ADH isozymes than men, leading to reduced metabolism of alcohol in the stomach and higher concentration of alcohol in the bloodstream. The literature therefore suggests that the biological relationship between alcohol use and body weight differs between women and men [6].

Small or moderate, but frequent, alcohol consumption is usually associated with reduced body weight [7]. Those who regularly consume moderate amounts of alcohol are more likely to reduce their intake of other foods to balance the caloric increase from alcohol. High-intensity drinkers (regardless of frequency) may be less likely than other drinkers to reduce their intake of other foods, potentially leading to weight gain [6]. It was also determined that the alcohol preload was followed by a greater energy intake at lunch than the other isoenergetic drinks [8].

Young people, age between 18 and 26 years, who represent the targeted population of this study, are the young adults, the future parents, and will play a role in the education of a new generation. It is important to know the risk behavior present in these individuals and the role of this behavior in the outset of some pathological conditions, such as obesity. Based on the results, educational measures can be taken and ways of modifying this behavior can be uncovered.

MATERIAL AND METHOD

The University for Medicine and Pharmacy Timisoara. The CORT 2004 study is a transversal epidemiologic survey assessing risk behavior in a group of young people attending the post high schools and universities in Timis County.

The participants were included in this study based on their free consent.

We used a fragment of the CORT questionnaire consisting of the questions referring to alcohol consumption. In addition, the participants were requested to fill in their height and weight, these being used for the calculation of the Body Mass Index (BMI), which is weight in kilograms divided by height in meters square. The three variables of interest are the frequency, the intensity and the type of alcohol use in the last 30 days. Data were introduced in a data base and were interpreted in the SPSS 17 program.

REZULTS

In this study had 2074 participants, with ages between 18 and 26 years from vocational schools, post high schools and universities in Timis County, of which 1297 females and 777 males.

As it is shown in the Figure 1, a large part of the participants to this study (47.91%) have reported the absence of alcohol consumption in the last 30 days. Likewise an important percent, 27.67%, have reported to have consumed alcohol infrequent, only 1-2 days, in the last month.

Survey respondents were asked how often they drank alcohol in the last 30 days, the response to this question representing the frequency of consumption.
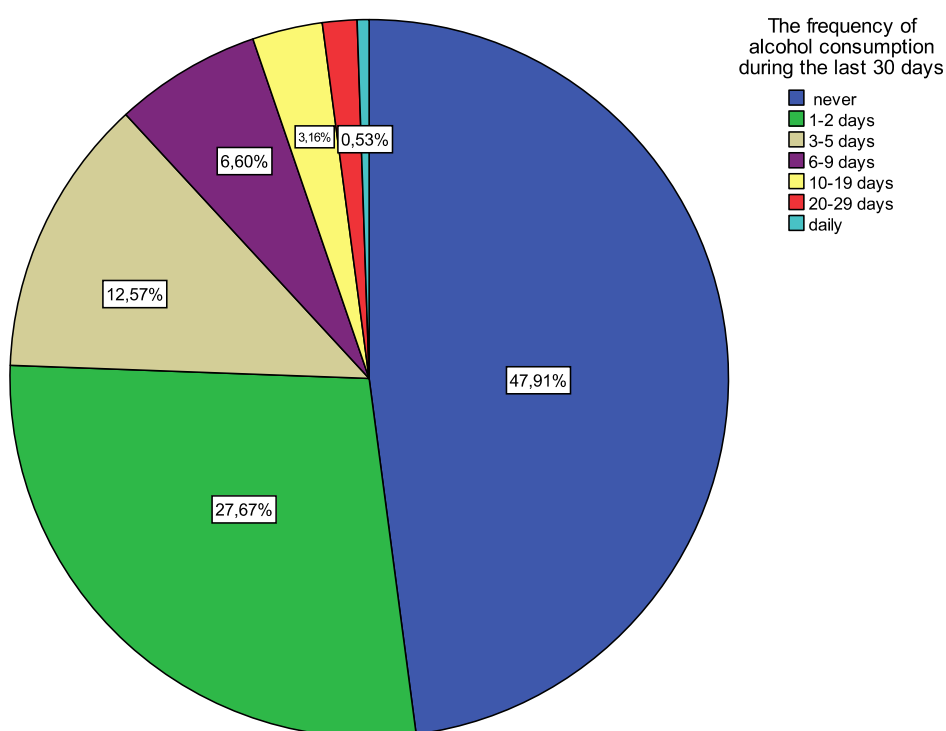

Figure 1. How often have the participants to the study consumed at least one unit of alcohol in the last 30 days

The correlation between the BMI and the frequency of alcohol consumption is positive and highly statistically significant ($p<0.01$). The value of the correlation index "r" is 0.133, and the increase in alcohol consumption concurs to the increase in BMI with 1%. This result is similar to the conclusions of French M.T. and col. [6].
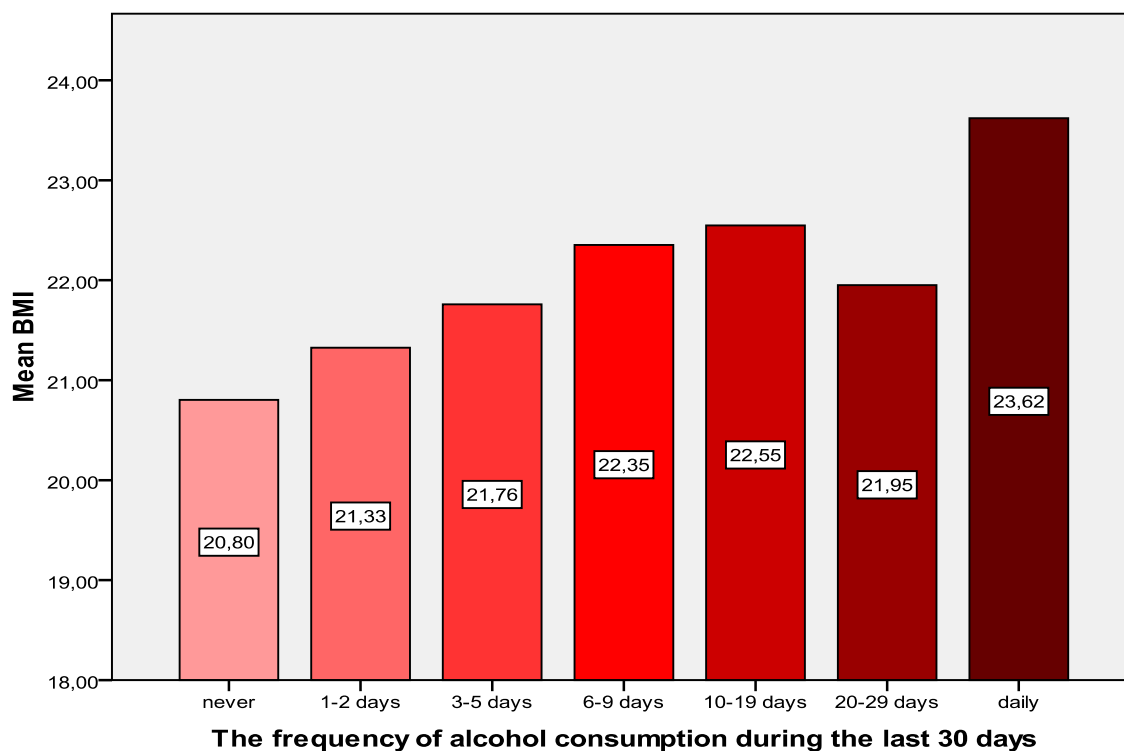

Figure 2. The variation of medium BMI related to the frequency of alcohol consumption in the last 30 days.

As seen in the Figure 2, the average BMI is higher in the group presenting the highest frequency for alcohol consumption.
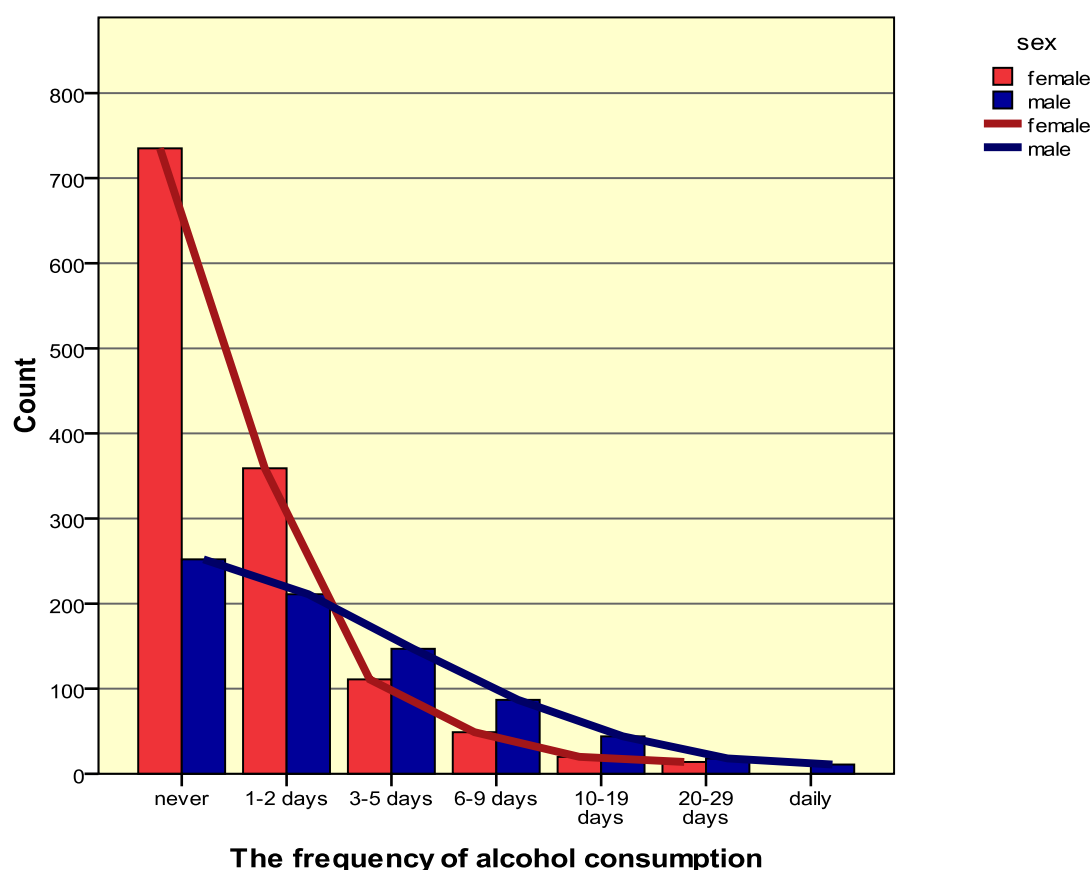
Figure 3. The frequency of alcohol consumption in the last 30 days related to sexes.

The frequency of alcohol consumption for the studied sample was different for males and females. Female participants reported in a much greater number than the male participants the lack of alcohol consumption in the last 30 days, and also reported no cases of daily alcohol consumption. The number of males reporting alcohol consumption decreases with the increase in consumption frequency (Figure 3).

Next, we investigated the existance of a correlation between the intensity of alcohol consumption and BMI. Respondents were asked in how many days the number of drinks they consumed excedeed 5 units in the last 30 days. This question formed our intensity measure of alcohol consumption (one unit: 25 ml strong alcohol = 1 small glass strong alcohol; 100 ml wine = 1 glass of wine; 250 ml beer = ½ bottle of beer).
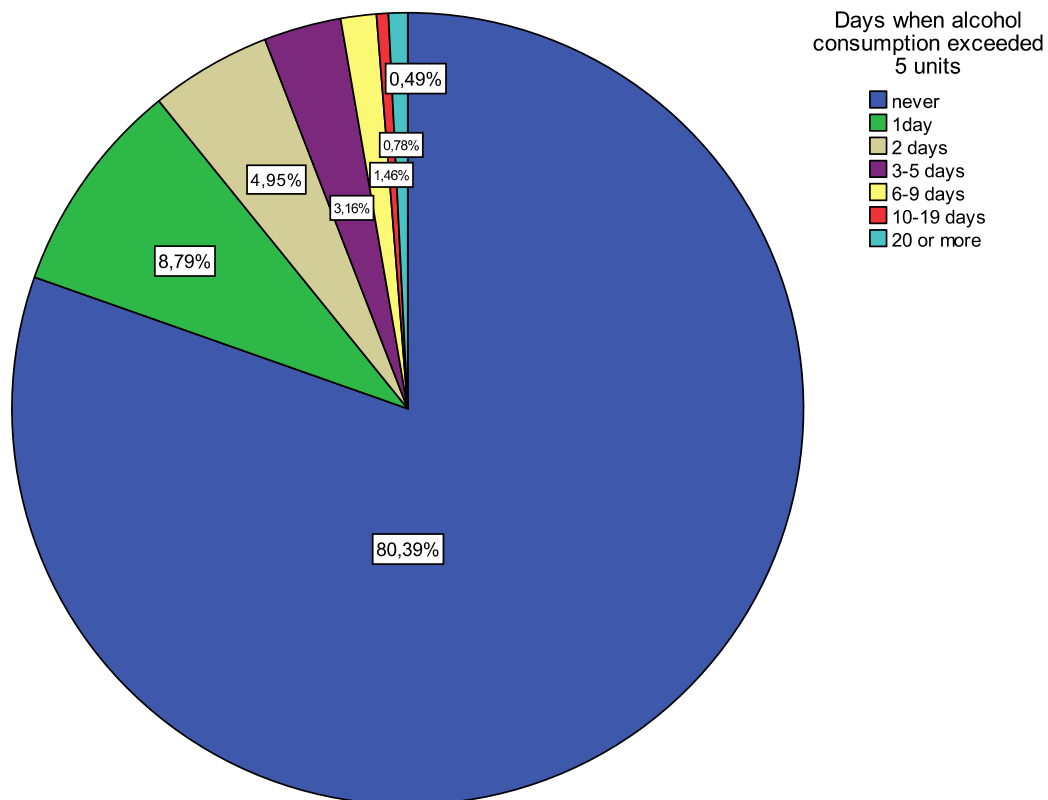
Figure 4. The number of days in the last month when the young people's alcohol consumption exceeded 5 units.

The great majority of young people participating in this study, 80.39% of them, reported they did not consume in the last 30 days alcohol in quantities equal or exceeding 5 units.

The correlation between BMI and the intensity of alcohol consumption is positive and statistically highly significant (p<0.01).

The value for the correlation index "r" is 0.141 and the increase in alcohol consumption intensity leads to an increase in BMI of 1%. This result is also similar to results from other studies. As seen in the figure 5 the individuals consuming important quantities of alcohol have the mean BMI superior to the rest.
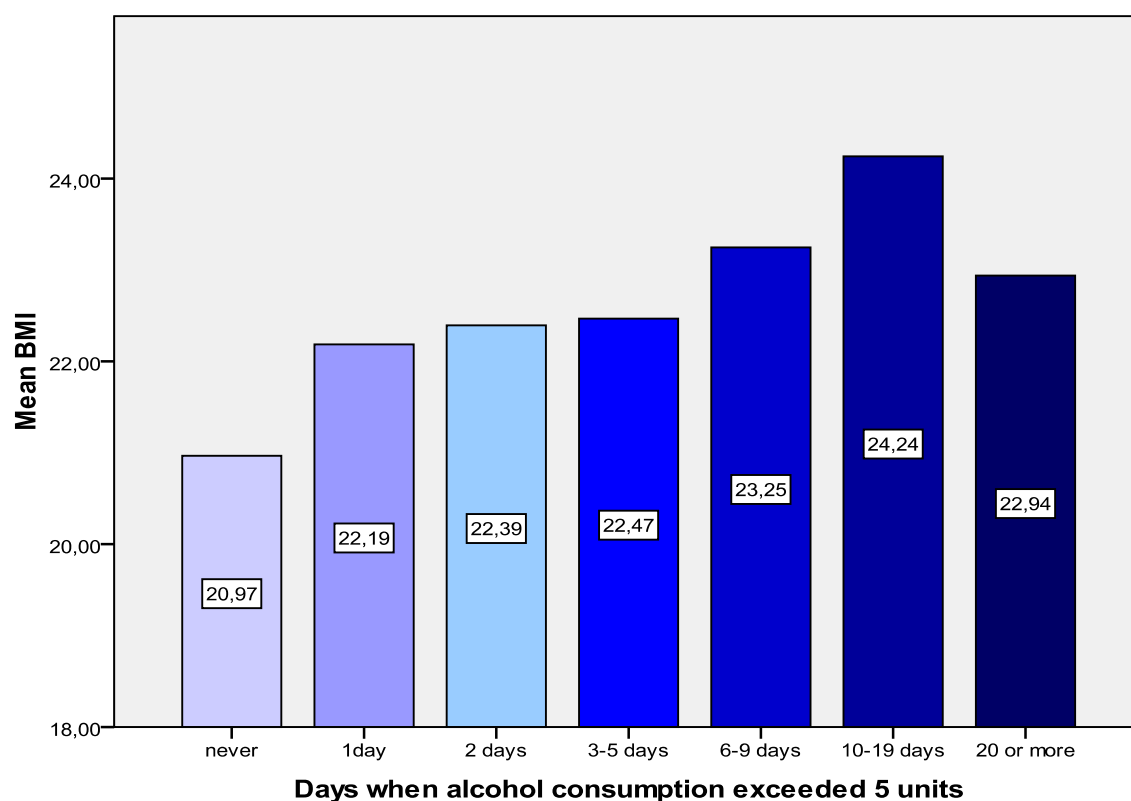
Figure 5. The variation of BMI related to the intensity of alcohol consumption
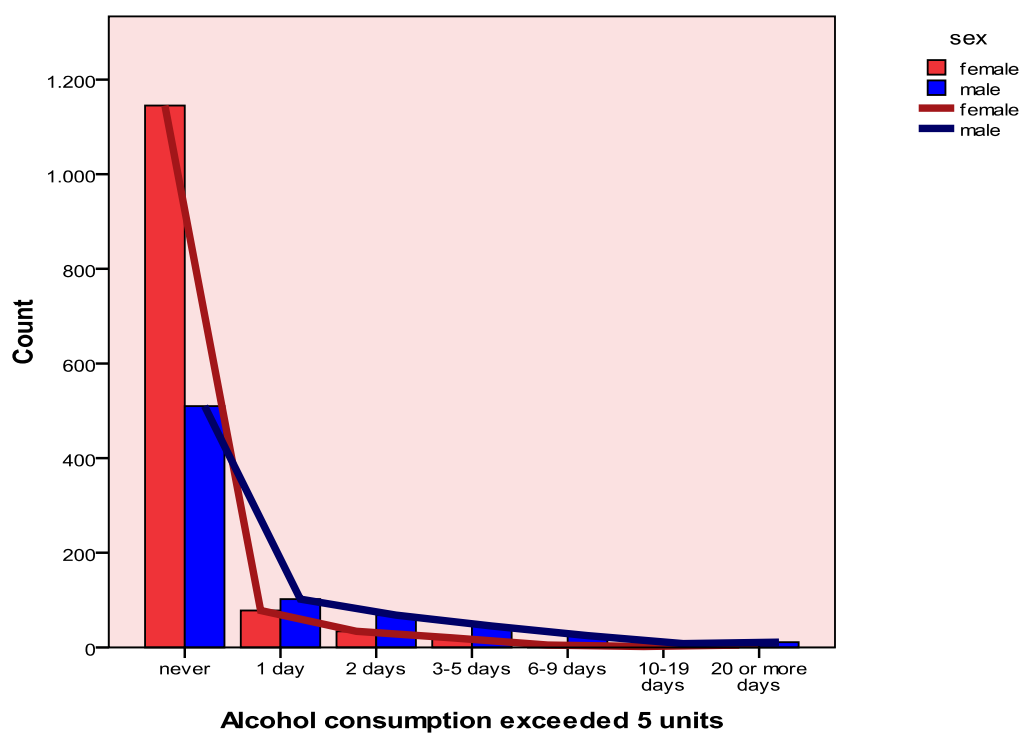

Figure 6. The intensity of alcohol consumption related to the participant's gender

The most important number of the female participants has reported the consumption of small quantities or the absence of alcohol consumption in the last 30 days. For all the values of alcohol consumption intensity, the number of females was much smaller than the number of males.

Among the alcohol consumers, the highest number is represented by those consuming

wine (841) and those consuming beer (775), only 219 are consuming liquor.

Based on gender, there is a correlation between feminine sex and non-consumption of alcohol. Males drink more beer and more liquor than females. For wine, the correlation with sex is not statistically significant.
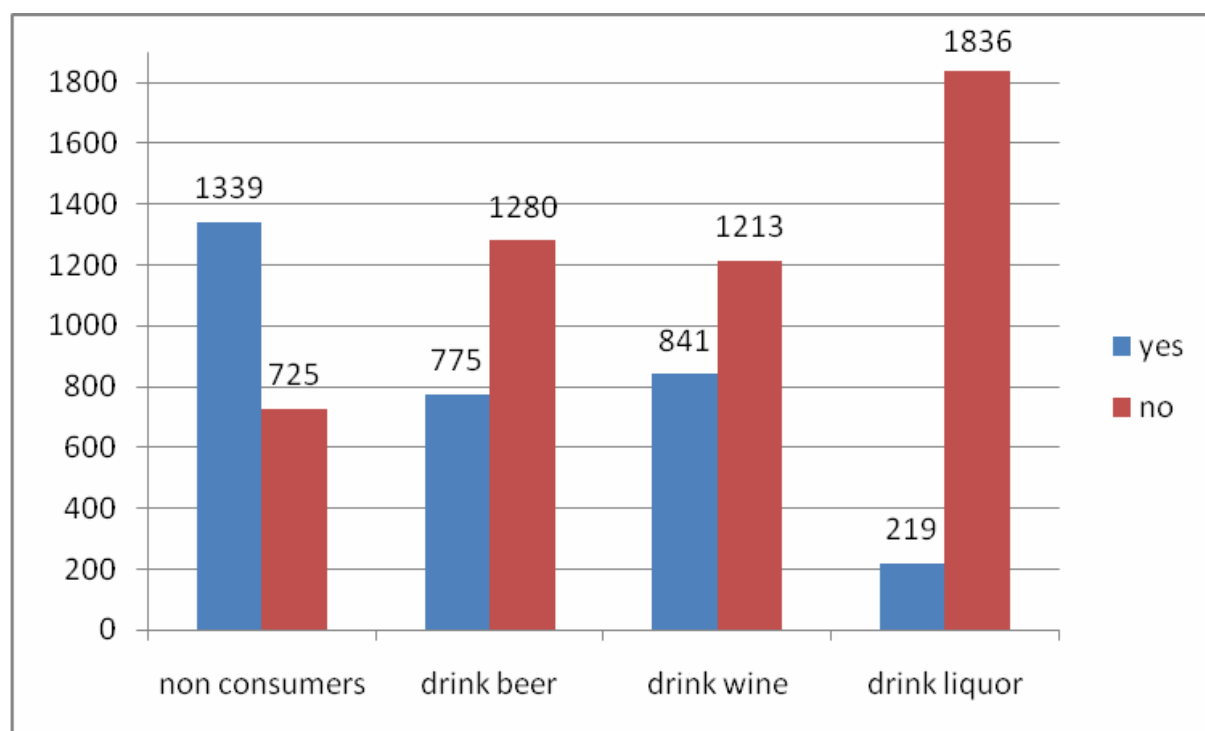

Figure 7. The number of consumers for different types of alcohol

For the studied sample, there is a correlation statistically significant between BMI and alcohol consumption, meaning that those who consume alcohol have a BMI slightly superior to the BMI of the non-consumers. It is also of interest the variation of BMI related to the type of alcohol consumed. More important is the correlation to the beer consumption, following the liquor consumption. The wine consumption does not seem to have any influence on BMI.

CONCLUSIONS

The most important results of this study can be summarized as follows. First the

frequency of alcohol consumption (the number of days when the respondents consumed alcohol during the last month) has a positive and statistically significant effect on BMI. In young people from the studied sample the frequent alcohol consumption is not present in the large majority, but those who reported a frequent consumption also have larger BMI. Also, female participants reported less frequent alcohol consumption towards male participants.

The intensity of alcohol consumption also correlates with BMI values. Most respondents never consumed alcoholic beverages in large quantities, resulting in a

low intensity of consumption. Female participants presented lower values for the intensity of alcohol consumption up against male participants. BMI is largest in those presenting the highest intensity of consumption.

The consumption of wine does not seem to influence BMI and wine is the most popular alcoholic beverage among young people. But the consumers of beer and liquor have higher values of BMI then those who are non-consumers.

This research has limitations. First, the height and weight of the participants to the study were self-reported, creating the possibility for errors. Previous research has shown that individuals have the tendency to overestimate their height and underestimate their weight, this way the values of BMI may be slightly modified [9]. Secondly, the alcohol consumption was also self-reported.

The published literature on this subject suggests that self-reported alcohol consumption measures are reliable for use in the statistical analysis [10].

In conclusion, recent studies on the alarming rise in average body weight are concentrated on diet and physical activity. Nevertheless, given the popularity and relatively high caloric content of most alcoholic beverages, alcohol consumption would seem to represent another potential target area in the battle against obesity. The present study indicates a statistically significant, yet quantitatively small, link between alcohol use and body weight. It is important to fight against alcohol consumption because of the health problems associated to this behavior, also because motor vehicle accidents and alcoholism. And it is possible through these measures to result a secondary effect of lowering the average rates of overweight and obesity.

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THE RELATIONSHIP BETWEEN SOME SOCIAL DETERMINANTS OF OBESITY AND BMI IN YOUNG ADULTS

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REZUMAT

Tot mai multe rapoarte recente ale organizaţiilor internaţionale subliniază importanţa determinanţilor sociali ca influenţe fundamentale asupra stării de sănătate şi a bolilor. În mod clar, unul dintre cei mai importanţi determinanţi sociali ai stării de sănătate în majoritatea societăţilor este nivelul de dezvoltare economică. Dar familia este prima cu care intră în contact tânărul şi în cadrul ei se formează comportamentul în primul rând. În acest studiu am căutat o corelaţie între gradul de educaţie al părinţilor şi IMC-ul pe de-o parte, şi între situaţia financiară a familiei şi IMC pe de altă parte. În primul rând, am descoperit o diferenţă statistic semnificativă între IMC-ul participanţilor la studiu de sex masculin şi feminin. Femeile tinere tind să aibă un IMC mai scăzut decât bărbaţii din aceeaşi grupă de vârstă. Pentru eşantionul luat în studiu nu s-a descoperit o relaţie statistic semnificativă între gradul de educaţie al părinţilor şi IMC, şi nici între gradul de mulţumire al tinerilor faţă de situaţia financiară a familiei şi IMC.

Cuvinte cheie*: factori sociali, indice de masă corporală, tineri*

ABSTRACT

An increasing number of reports from international organizations emphasized the importance of social determinants as fundamental influences on the health and disease. Clearly, one of the most important social determinants of health status in most societies is the level of economic development. But the family members are the first that the young people come in contact to, and in the family's environment the behavior is shaped. In this study we looked for a correlation between the parents' level of education and the BMI, and also between the financial situation of the family and the BMI. First we have discovered a statistically significant difference between the male and female study participants. The female participants have lower BMI than the male participants. For the studied sample, there was no statistically significant relationship discovered between the parents' level of education and BMI, or between the level of satisfaction of the young people regarding their family's financial situation and BMI.

Keywords*: social factors, body mass index, young people*

INTRODUCTION

Over 200 years ago, the philosopher Aristotle issued a simple, yet prescient thesis, writing, "Society is something in nature that precedes the individual". Aristotle's notion is one that is particularly salient today. In an era characterized by an explosion of research into fundamental biological systems, we are seeing a parallel surge of interest in understanding the social determinants of health. Myriad recent reports from the Institute of Medicine, World Health Organization, United Nations, and other organizations have emphasized the importance of more frequently considering social determinants as fundamental influences on health and disease. Certainly, one of the more important social determinants of health in most societies is the level of economical development. In most societies, greater development is associated with increased longevity, and reduction in the prevalence of infectious disease.

The social determinants perspective is one that is particularly well suited to obesity research, conducted both in the United States and in the most of the industrialized world. Obesity is a condition whose primary and most proximate determinants (diet and physical activity) are not elusive. However, we are increasingly learning that to promote a shift in population distribution of obesity requires attention to the full range of social factors that impact dietary and physical activity practices. It is well known that dietary choices and opportunities for physical activity are heavily patterned by socioeconomic resources [1].

As countries get richer and healthier, the leading causes of death shift from infectious to chronic disease (the epidemiologic transition). But, despite increasing wealth, better population health and changes in the "big killers", socioeconomic inequalities in health remain. As countries move trough the epidemiologic transition, rates of obesity typically rise and their social profile changes. Thus, the positive association between wealth and obesity found among adults (particularly women) and children in low-income countries flattens out in middle income countries before giving way to a negative association in high income countries, where obesity risk is higher in lower socioeconomic groups. This widening of obesity inequalities is more marked for women and when people's socioeconomic position is measured by education, an indicator that captures the influence of childhood conditions as well as those in adulthood [2].

A review conducted by Lindsay McLaren (2007) with the objective to update Sobal and Stunkard's exhausting review of the literature on the relation between socioeconomic status and obesity, included 333 published studies. The overall pattern of results, for both men and women, was of an increasing proportion of positive associations and a decreasing proportion of negative associations as one moved from countries with high levels of socioeconomic development to countries with medium and low levels of development. Findings varied by socioeconomic status indicator. For example, negative associations for women in highly developed countries were most common with education and occupation, while positive association for women in medium and low development countries were most common with income and material possession [3].

A study from 2009, conducted by Hajian-Tilaki in Iran, indicates that education level is inversely associated with general obesity in both sexes, but with abdominal obesity only in women [4]. A similar conclusion resulted from another study, which is that in Western societies, a lower educational level is often associated with a higher prevalence of overweight and obesity. However, there may be important international differences in the strength and direction of this

relationship, perhaps in respect of different levels of socioeconomic development. In most European countries, people of lower educational attainment are now most likely to be overweight or obese [5].

When we talk about young people, a huge importance is attributable to the influence of the family, especially the parents. In this study we tried to find a connection between the education level of the parents and the body mass index of their children. Another aspect of interest was the family's financial situation, as an indicator of socioeconomic status.

MATERIAL AND METHOD

This study is based on the grant "The evaluation of risk behavior dimension in high school students and young people from vocational schools and universities in Timis County" (CORT 2004), carried out between 2003-2005, cod CNCSIS 1167, attained at The University for Medicine and Pharmacy Timisoara. The CORT 2004 study is a transversal epidemiologic survey assessing risk behavior in a group of young people attending the colleges and universities in Timis County. The participants were included in this study based on their free consent.

We used a fragment of the CORT questionnaire consisting of the questions referring to the parent's education. In addition, the participants were requested to fill in their height and weight, these being used for the calculation of the Body Mass Index (BMI), which is weight in kilograms divided by height in meters square. We also used the question referring to the satisfaction of the participants regarding the financial situation of their family. Data were introduced in a data base and were interpreted in the SPSS 17 program.

RESULTS

This study had 2074 participants, with ages between 18 and 26 years from vocational schools, colleges and universities in Timis County, of which 1296 females and 778 males. The mean BMI for this sample was 21.29 kg/m^3, and the value of the median is 20.57 kg/m^3.
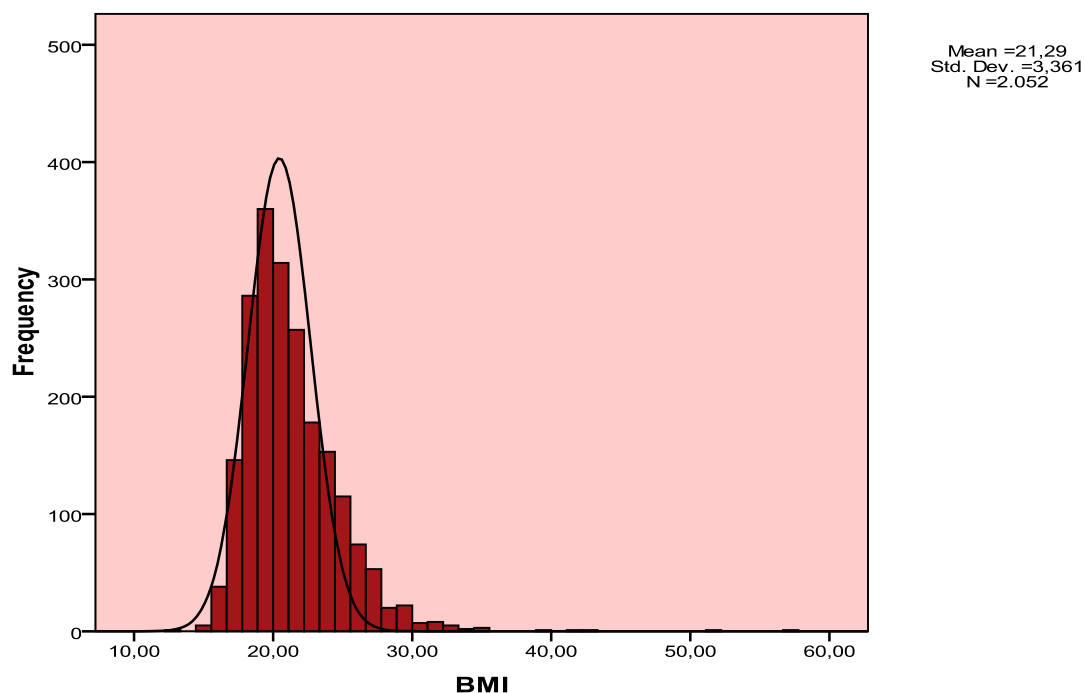

Figure 1. Distribution of BMI values of the participants to the study

From the total number of participants of 2074, 62,4% (1296) were female and 37.5% (778) were male.
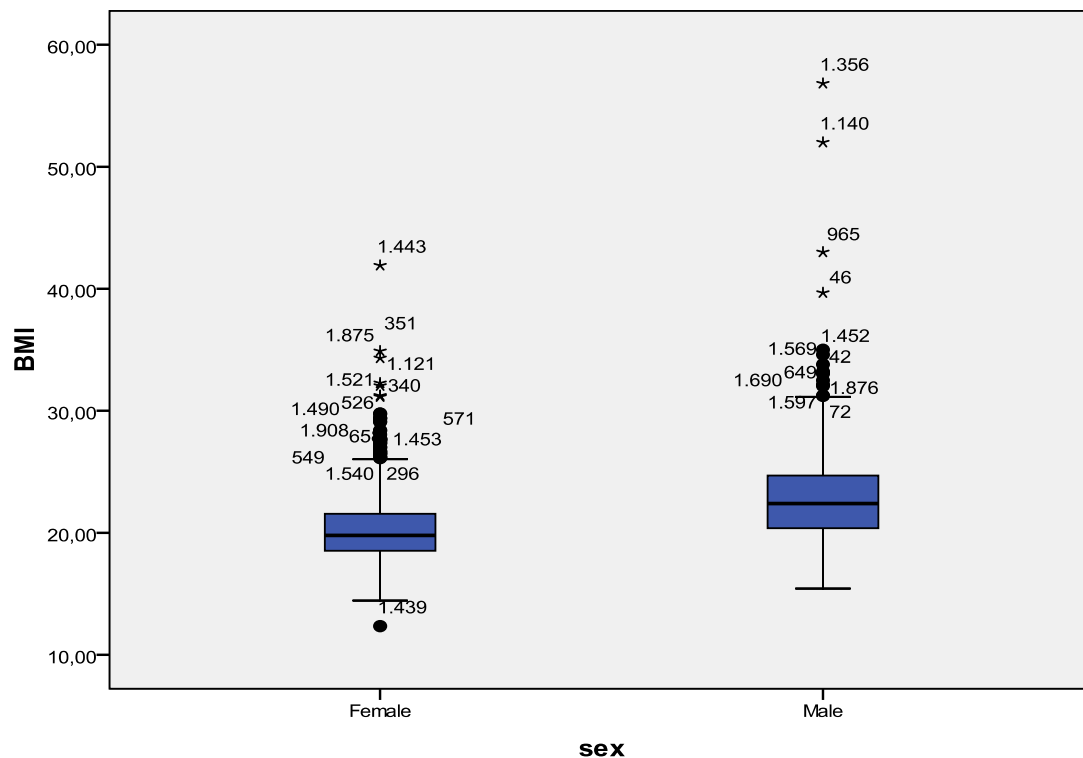

Figure 2. The distribution of BMI of the participants to the study, according to sex

For the comparison of the BMI of the genders we have applied the Mann-Whitney test for nonparametric data. The BMI of feminine and masculine genders differs statistically significant U = 26.1034, z = -17.812, p = 0.000, r = 0.39, which stands for a medium size effect. This means that the BMI of the feminine participants is significantly lower than the BMI of the masculine participants.

Next we tried to find a significant correlation between the father's level of education and the BMI of the young adults participating to this study.

From the total number of participants to this study, 710 individuals responded their father's last school graduated was the university, 285 responded that this was the college, 537 responded high-school, 440 responded vocational school and 52 said their father graduated 8'th grade or less.

After the Kruskal-Wallis Test was applied, the BMI of the young adults participating to the study was not significantly affected by the father's level of education H (4) = 2.55, p > 0.05.

The figure 3 presents graphically the independence of the BMI of these young adults towards their father's level of education.

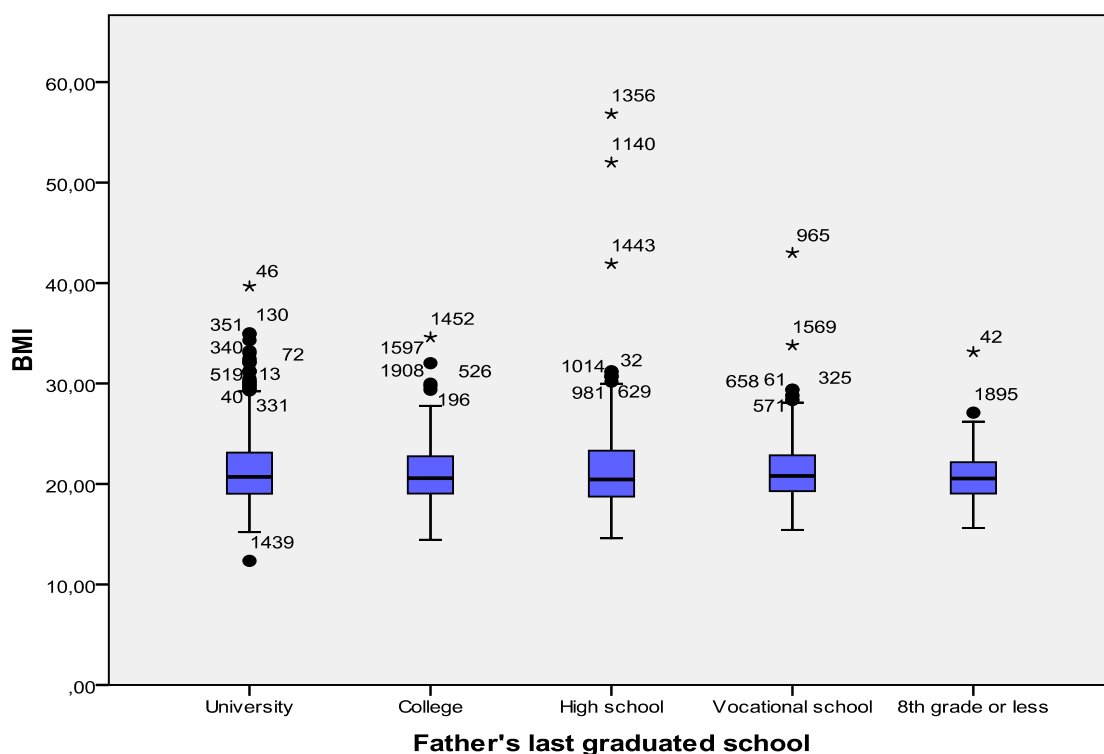**Figure 3. The relation between the BMI and the father's last graduated school**

We turn next to the mother's level of education and the way this influences the BMI of young adults. After the Kruskal – Wallis Test was applied, we had found that the BMI was not significantly affected by the mother's level of education H (4) = 7.027, p > 0.05.
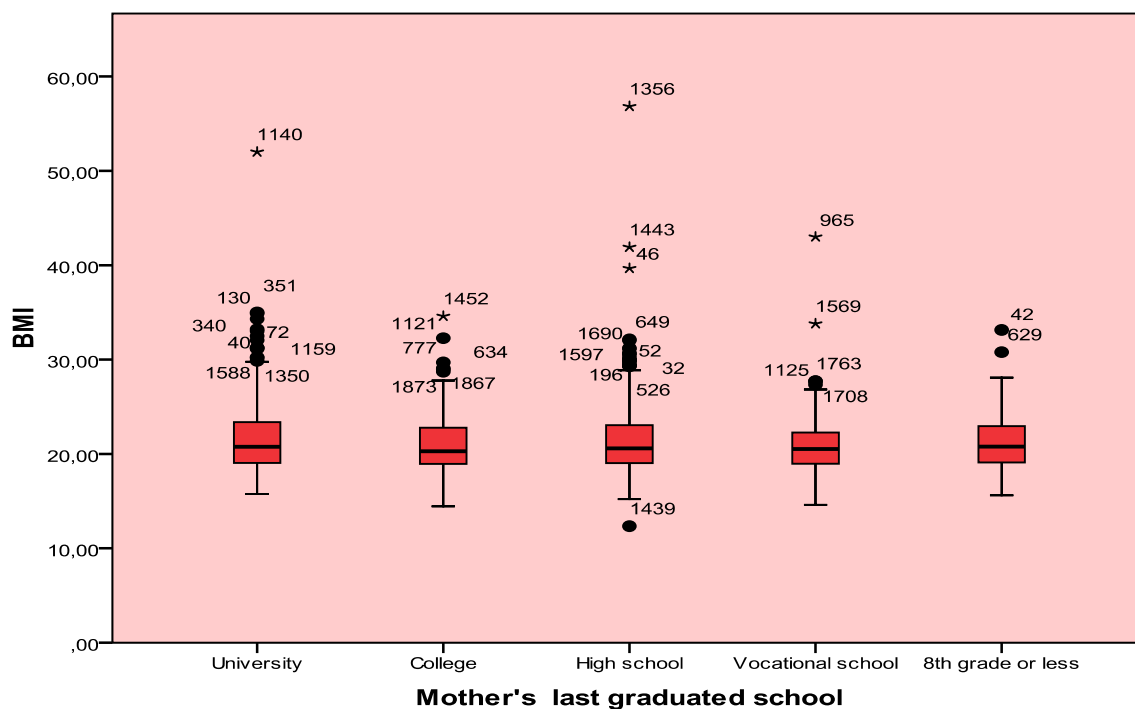

Figure 4. The relation between the BMI and the mother's last graduated school

One of the questions in the CORT 2004 Questionnaire was: "How satisfied are you of your family's financial situation?" From the 2069 individuals who answered this question, 210 were very satisfied, 904 were satisfied, 554 were nor satisfied, nor unsatisfied, 299 were not very satisfied and 100 were not satisfied. The financial situation of the family is an important component of the socioeconomic status of a person. We considered of interest to find out if there is a relation between this level of satisfaction and the BMI of the participants.

After the Kruskal – Wallis Test was applied, we had found that the BMI was not significantly affected by the level of satisfaction with the family's financial situation $H(4)= 8.108$, $p > 0.05$.
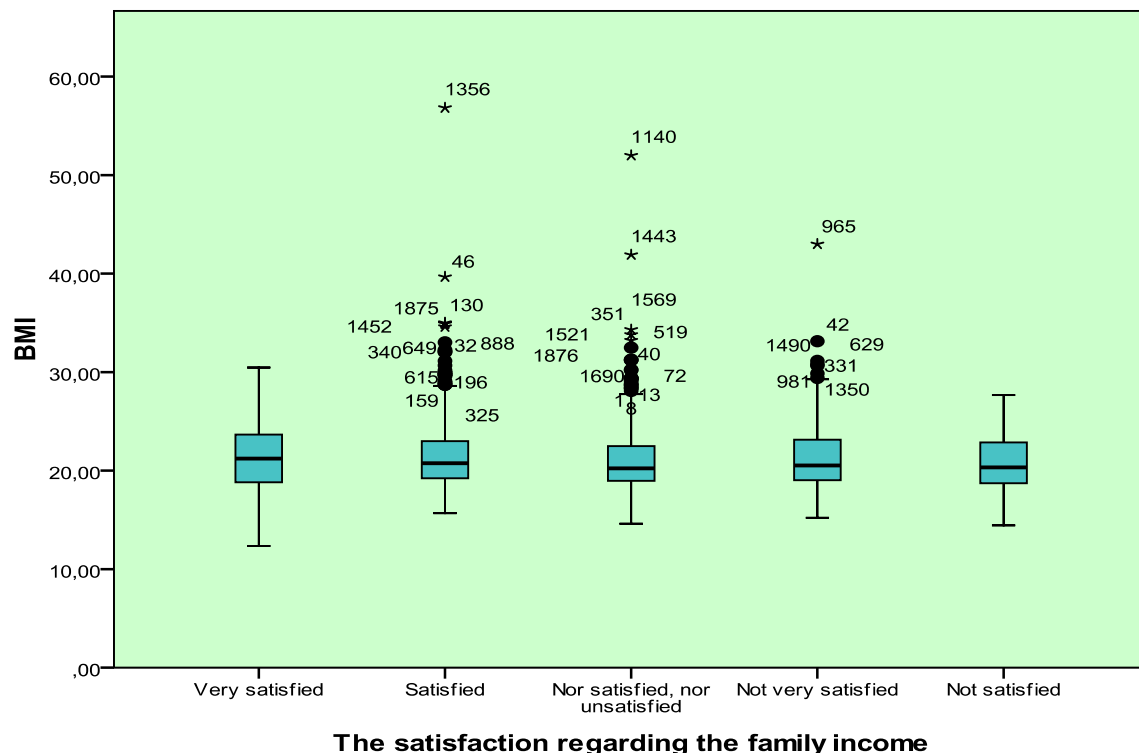
Figure 5. The relation between the BMI and the level of satisfaction regarding the family income

CONCLUSIONS

As expected, there is a statistically significant difference between the BMI of feminine and masculine participants to the study. This may be because the females are more inclined to control their weight. Although the body shape and size have a symbolic role for both men and women, they are perceived differently. In case of men, there are opposite forces at work: they are discriminated because of their weight, but also a larger body weight may be a sign of power.

The BMI of the young people participating in this study presented no statistically significant relation to the parents' level of education. Also, there is no statistically significant correlation between the BMI and the level of satisfaction towards the family financial situation. This may be due to the fact that the financial situation of the family is not accurately assessed by the level of satisfaction of the participants to the study. Socioeconomic position is a multidimensional construct that incorporates a range of potential indicators reflecting one's status in the social hierarchy, wealth, power, ownership of material resources, and

the associated social standing. It is possible that the two indicators of socioeconomic position (parents' level of education and the satisfaction regarding the financial situation of the family) are not sufficient for the description of this relationship. Future research should consider also different social determinants of obesity.

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HEALTH RISK BEHAVIOR DURING YOUNG ADULTHOOD

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REZUMAT

Perioada adultului tânăr este heterogenă. S-a observat că pe parcursul vieţii unui individ, există o mai mare schimbare şi varietate în rolurile sociale ale vieţii de adult tânăr, decât în orice altă perioadă. Mulţi adulţi tineri au o libertate considerabilă, fără restricţii comportamentale. Comportamentele cu risc pentru sănătate pot fi considerate rezultatul unui număr mare de determinanţi, de la atitudini comportamentale percepute ca şi norme sociale, la alţi factori, cum ar fi personalitatea sau poziţia socio-economică.
Cuvinte cheie: adultul tânăr, comportamente cu risc pentru sănătate

ABSTRACT

The young adulthood is heterogeneous. During the lifetime of an individual, there is a great shifting and variety in the social roles of the young adult than in any other period. Many young adults have a considerable freedom, without any behavioral restrictions. The risk behavior can be seen as the results of several determinants, behavior attitudes, perceived as social standards, and other factors as personality and socio-economical position
Keywords: young adult, risk behavior

THE YOUNG ADULTHOOD

Contrasting the great number of studies dedicated to the transition period from the teenager period, the shifting relation between parents and children, the collegial relationships, or the romantic relationship, there is a small number of studies examining the transition from late teenage to the mature adulthood.

The scarce of the studies on the transition is surprising, given that the adulthood is considered a milestone for the establishment and improvement of future careers, families, intimate relationships and identity [1]. Current trends in Western society have contributed in varying proportions to the delay of the taking the roles of adults, young people becoming undecided regarding occupational issues, marriage, and procreation than before [2].

Arnett was the first to use the term early period of adult life to indicate the period between 18 and 25 years, which includes both exploration and growth and it is

different both from teenage and adulthood [3].

There is increasing evidence showing that the transition to adulthood is a distinct stage of development presenting challenges for the young adult passing this period and opportunities, especially the chance to create new relationships and identifications [4].

The study of the young adult period showed a considerable resistance and focused particularly on the transition to young adulthood as a possible time for the strength of character development. Instead it gave less attention to youth transition to adulthood in the context of adversity [5].

Tanner in 2006 gave the defining elements such as exploration of identity in the context of love and work, taking himself in the spotlight, possibilities and opportunities for exploration. After Tanner, now it is the time for refocusing the relationships, especially family relationships [6].

The young adulthood is heterogeneous. Shanahan (2000) had observed that during the lifetime of an individual, there is a great shifting and variety in the social roles of the young adult than in any other period [7].

Many young adults have a considerable freedom, without any behavioral restrictions [8].

Some researchers have argued that the transition to adulthood is important and, in fact, present generation is different from previous ones in that it is less united, especially because some have higher aspirations. The American society has reduced its expectations, leading over time to the extent of developmental phase.

Many psychologists have found that the experience of transition to adulthood occurs in terms of a balance between autonomy and dependence. Correspondingly, there was a reduction of mental illness for some groups

of young adults [9]. The health status of young adults is linked to that of the families from which they came from [8, 10].

In one study that followed 205 young people during this period, Roisman et al. (2004) showed predictive connections between the three tasks of the late adolescence and young adulthood [11]:
- participation in academic,
- the quality of friendship relation,
- the absence of symptoms of destructive behavior.

There were also examined two areas that probably result from this period:
- romance skills and
- work skills.

Romance skills represent the ability to work effectively in an intimate relationship. Work skills represent the proper performance of work tasks.

Following these young people up to the age of 30, and corroborating the reports of participants and parents and the clinical scores, was found that the main features of the age of 20 years were good predictors of the success areas 10 years later, with one exception: behavioral skills. Academic skills at 20s are good predictors of the behavior problems and the obedience to the rules of the age of 30 years.

Studies by Werner and Smith [12] have pursued the resources and the resilience in the transition to young adulthood, combining again many areas. They have shown that success in young adulthood depends on:
- central resources present in childhood, such as high IQ, parental qualities and appropriate socio-economic status,
- adaptive personal resources including the ability to be calculated, to be motivated, to be independent and to cope with various situations,
- to have the support of adults.

This study suggests important areas of possible prevention interventions for vulnerable youth in the transition to development. The same study shows continuity between childhood and young adulthood. The investigators plan to pursue these young people to adulthood and the results could be used for understanding this period.

Demographic changes have also affected young adulthood [9]:
- In 1970 the median age of marriage for men and women was 22.8 years and 20.3 years respectively, while today id 26.8 years and 25.1 respectively, and this situation has profound implications for development;
- Similarly, in 1970 the proportion of high school graduates who enrolled in higher education was about 51.8%, and increased to 63.3% in 2000,
- Even more, the transformation of youth in productive force has become longer and more unstable,
- The demand for jobs in services exceeds the need of jobs in production,
- Certain specific technical areas have experienced growth and also stressed the need of a better trained workforce; all these have contributed to a change in the role of the adult who has a greater concern for obtaining a high educational level.

The above led Arnett (2000) [3] to formulate the concept of "early period of young adulthood", which was described above. From a certain perspective, Erikson's identity formation can be viewed as prolonged and even being a necessity of young adulthood. Arnett also added that beyond the necessities of emotions and work, another goal ist o obtain a global vision of the world.

Another important feature of early adulthood in the contemporary era is the rapid pace of change and some problems that have not been described in previous eras.

Robert Blom (National Research Council and Institute of Medicine 2006, USA) recently described a set of events that makes the adolescents and adults of America to be the first generation which:
- Will understand terrorism as a daily problem
- Will have to be competitive in a global economy
- Will have to live with instant communications available worldwide
- Will spend part of his childhood in a one parent home
- Will be threatened by AIDS throughout life
- Saw the destruction of an entire American city: New Orleans during hurricane Katrina.
Blom's point of view is that compared to present generation, the previous generations have faced difficult tests but now the nature of the tests will shape the experience of young people.

How contemporary specific events, individually or acting together will have an influence on the development of present generation remains to be investigated. The following questions are placed:
- How will the various types of technological support for extremely fast communications such as messages, the e-mail influence the development of intimate relationships?
- Wide spread use of instant media in children and adolescents will affect positive or negative their physical and mental development?[13]

HEALTH RISK BEHAVIOR DURING THE YOUNG ADULTHOOD

Premises
- The transition from adolescence to adulthood is marked by major attitudes and behavior shifting
- The transition from high school to university is leading to dramatic modification of the lifestyle, resources, and these alterations are influencing the the health risk behavior [14-16].

- Numerous studies have documented health risk behaviors of students, such as reduced physical activity, increased smoking and alcohol use and reduced overall diet quality [15-18].

- Health risk behaviors can be considered the result of a number of determinants, ranging from certain behavioral attitudes perceived as social norms [19,20], to other factors such as personality [21-23] or socio-economic position [24].

- Various indicators of psychosocial suffering, often with low self-esteem were associated with increased health risk behaviors in young adults.

The "pseudomature" theory was developed by Newcomb (1987) as a conceptual model for understanding long-term consequences of drug use in adolescence. The central hypothesis of this theory is that early engaging in activities and specific responsibilities of adulthood during adolescence affects the psychosocial skill acquisition required for successful performance of the role of adult, skill typically learned during adolescence [25].

Other researchers have tested and found evidence supporting the theory of pseudo-maturity, especially when student status is considered a key factor in the transition to adulthood other specific roles. It is expected that early involvement in various types of deviant behavior leads to significant psychological impairment during life. During youth, engaging in behavior opposed to the rules reflect a pseudo-mature development, characterized by inadequate adult skill acquisition, resulted in impaired emotional and psychological problems in during life [25].

Drug abuse both legal and illegal, is usually widespread among young adults. Using drugs during this period is extremely harmful because they may interfere with optimal development of the brain, particularly in frontal structure, which is disrupted due the process of maturation during the early adulthood. Frontal lobes are suspected to have a predominant role in the regulating the volitional behavior, at both cognitive and emotional level:

- On the one hand, immature functions of the frontal lobes may predispose young people to health risk behaviors such as experimenting various drugs

- On the other hand, drugs with addictive properties influence the frontal and fronto-limbic circuits' chemical neuromodulation and may interfere with brain maturation in these regions.

This situation makes young adults not only vulnerable to one category of risk behaviors, but in a more general way, can have adverse chronic effects on cognitive functions [26].

The use of amphetamines has become a worldwide major public health problem. The use of amphetamines and health related problems are increased in early adulthood (20 – 29 years). Long term use of amphetamines or high doses is associated with many health problems, both physical and mental: aggressive behavior, cognitive deficiencies, anxiety, depression, hallucinations, psychosis, cardiovascular and neurological problems. Understanding the characteristics of amphetamines consumers and factors leading to their use may help prevent the expansion of consumption among adolescents and young adults [27].

Most illegal drug users are also alcohol consumers. The incidence of alcohol consumption reached 95.1% in groups of young adults aged between 21 and 27 years. Regarding the consequences of alcohol consumption at this age group, subtle cognitive deficiencies can be detected although they are not apparent until drinkers reach certain threshold quantities and frequencies. But some physiological changes in brain activity (electrophysiological activity) can be detected before the behavior deficiencies [26].

CDC estimates that approximately 4, 000 individuals under the age of 18 years try their first cigarette every day in the United States (CDC, 2003). Many of these adolescents evolve to higher intensities of smoking and adults become addicted to nicotine. For the future, trying to obtain the reduction of damage caused by smoking in young adults, the necessities of a better understanding of the determinants of smoking and the awareness of the impact of government measures to reduce smoking are on the priority list of the public health professionals [28]. Since 1986, researchers involved in the tobacco industry found that, compared to the rest of the smoking population, the highest rates of smoking cessation is recorded in young adults. Many smokers who have the high probability to give up the habit, such as intermittent smokers and those who change brands of tobacco are also young. The tobacco companies are trying to keep these young people by developing products that seem to have less addiction or be more socially acceptable [29].

Diet and physical activity have important roles in determining individual health status, along with genetic factors. Dietary habits and physical activity are beginning to form in childhood and continues to shape up in adulthood. While childhood is characterized by resistance to new culinary experience, young people use new food products more often to assert their independence, but not always in a beneficial way.

The frequency of obesity in all age groups increased by 2 - 3 times in the last two decades [30]. Results of Behavioral Risk Factor Surveillance System (BRFSS) conducted between 1991 and 1998 shows that the greatest increase in obesity rates occurred in the 19–29 years age group but also in individuals with higher education [31].

The young adult is furthering from the familiar environment and is creating a new social environment and this will affect in varying proportions the diet. An adequate consumption of fruit and vegetables is strongly associated with the reduced risk for many chronic conditions. Studies conducted nationally in the United States have shown that young people, especially those aged between 18 and 24 do not consume sufficient quantities of these foods. The situation is similar in our country for this age group, the young people preferring the fast-food, which is rich in fat, cholesterol and sodium. Promoting dietary change in young healthy adults may be, in particular difficult. Potential future benefits of balanced diet can seem less tempting to this population group compared with the immediate physical and psychological benefits [32].

In recent years, there is growing concern about violent behavior in youth. Researchers agree that an explanation of aggressive behavior must take account of psychosocial and biological processes. Existing data from the literature provides support for the bio-social explanation of violence and suggests that both the social and the biological factors must be studied to properly understand the problem [33].

Lack of information on sexual behavior is more acute in late adolescence and young adulthood, a fact proven by the small number of studies on this subject, conducted in Central and Eastern Europe, when young people begin their lives without being watched closely by parents. Patterns of sexual behavior of young people in Central and Eastern Europe, including our country are modifying constantly.

The reducing of age at which they became sexually active is obvious especially in girls [34]. In the context of sexually transmitted diseases, numerous studies have shown that the main risk factor would be inconsistent use of preventive measures (condoms) [35,36].

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THE STUDY OF CARDIOVASCULAR CHRONIC MORBIDITY IN THE CASE OF PUPILS FROM TIMISOARA

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REZUMAT

Bolile cardiovasculare cronice constituie o realitate în România, în timpul anilor de şcoală şi un domeniu de lucru pentru medicul din cadrul comunităţilor de elevi. Obiectivul studiului a fost evaluarea morbidităţii cronice cauzate de boli cardiovasculare în şcoli, ca un indicator indirect al stării de sănătate, cu ajutorul indicilor de morbiditate. Lotul de elevi din Timişoara care a fost luat în studiu a fost de 8708 elevi cu vârste între 6-18 ani, de la trei şcoli, în perioada 2000-2006, folosind examinarea medicală periodică, precum şi situaţia în ceea ce priveşte starea de sănătate. 26 boli cronice cardiovasculare au fost diagnosticate şi un total de 328 pacienţi. Cea mai frecventă boală cardio-vasculară: prolapsul de valva mitrala, 38.71%. Eficienţa activităţii medicale a fost observată de evoluţia favorabilă a copiilor şi adolescenţilor.

Cuvinte cheie: elevi, boli cardiovasculare, monitorizare

ABSTRACT

The cardiovascular chronic diseases constitute a reality in Romania during school years and a work domain for a physician within the communities of pupils. The objective of the study was the evaluation of the chronic morbidity caused by cardiovascular diseases in schools, as an indirect indicator of the health state, with the help of morbidity indices. The lot of pupils from Timisoara that was taken into consideration was of 8708 pupils between 6-18 years old, from three schools from Timisoara, during the period 2000-2006, using the medical periodical examination and the situations regarding the health state. 26 chronic cardiovascular diseases have been diagnosed and a total of 328 patients. The most frequent cardiovascular disease is the mitral valve prolapse, 38.71%. The efficiency of the medical activity was observed by the favorable evolution of children and teenagers.

Keywords: pupils, cardiovascular diseases, monitoring

INTRODUCTION

Cardiovascular chronic diseases during school years represent a reality in Romania and they are included in the List elaborated and codified by the Health Ministry [1].

Cardiovascular chronic diseases of children and teenagers represent a work domain for a physician within the communities of pupils [2-4].
The attitude of the physician towards the chronic pathology must comprise the following:
- a diagnosis as exact as possible,
- an inventory of the environmental risk factors,
- militating for the reduction of causes, in collaboration with the family and the teachers,
- curing the patients as much as possible [5,6].

The selection for establishing the efficiency of the medical activity in the case of chronic patients treated both curatively and preventively has been done based on the evolution of the medical condition [7].

The present study allows keeping in the spotlight the evolution of the health state in the case of pupils.

The objective of the study is the evaluation of the chronic morbidity caused by cardiovascular diseases in schools, as an indirect indicator of the health state: general and specific prevalence, the percentage of cardiovascular diseases, the efficiency of the medical activity for the cardiovascular chronic morbidity.

METHODOLOGY

MATERIAL

The lot of pupils from Timisoara that was taken into consideration was of 8708 pupils between 6-18 years old, from three schools from Timisoara, during the period 2000-2006.

Within the lot, the sex distribution was the following: 50.4% boys and 49.6% girls.

The ages of the pupils from the primary, secondary and highschool levels were between 6-18 years.

METHOD

Chronic morbidity caused by cardiovascular diseases within communities of children and teenagers was observed by periodical medical examination and the general medical examination of the pupils health state.

The periodical medical examination is done at least once a year within a community. It monitors the existence of development problems, both physical and neuro-psychical; the existence of deficiencies and diseases specific for the age, with an accent on the following diseases: post streptococci diseases, hypertension, puberty problems, refraction problems, posture problems, neurosis, behavioral and adjustment problems.

The general medical examination is done once a year and at milestone ages for the school period: fires grade, corresponding with the start of school; fourth grade, pre-puberty stage; eighth grade, puberty; twelve and thirteenth grades, graduation of pre-university studies. The purpose of this examination is mainly to find chronic cases in view of treating them. Within this medical examination, the physical and neuro-psychical development is evaluated as well as chronic morbidity.

Individual data is registered and the morbidity indices are calculated: general and specific prevalence, percentage.

Prevalence is used in general for the study of chronic morbidity. It refers to the cases of

disease within a time frame, both old cases, known from a prior analysis and new cases. The percentage refers to the cases with a specific disease, in comparison to all the cases of the same category.

Establishing the efficiency of the medical activity for chronic cardiovascular diseases takes into consideration treatment and evolution [1,3].

RESULTS AND DISCUSSIONS

1. THE GENERAL DYNAMIC OF THE CHRONIC CARDIOVASCULAR DISEASES DURING THE PERIOD 2000-2006

For the diagnosed chronic cardiovascular diseases, the general and specific prevalence was calculated on categories of diseases, for the investigated community and on years of study, 2000-2006 (Table 1).

Table 1. Centralized situation regarding chronic cardiovascular morbidity for pupils aged 6-18, during the period 2000-2006

Categories of diseases	Number of cases Specific prevalence						
	2000	2001	2002	2003	2004	2005	2006
Mitral valve prolapse	7 0,80	18 1,20	26 3,25	21 1,61	25 1,74	18 1,00	12 1,17
Congenital cardiac miopy	1 0,11	12 0,80	1 0,12	3 0,23	6 0,41	5 0,28	2 0,19
Sinus tachycardia	1 0,11	2 0,13	7 0,87	7 0,53	3 0,20	5 0,28	5 0,48
Arterial hypertension	2 0,23	1 0,06	8 1,00	5 0,38	3 0,20	4 0,22	5 0,48
Systolic murmur	1 0,11	- -	4 0,50	7 0,53	5 0,34	8 0,44	2 0,19
Atrial septal defect	- -	3 0,20	3 0,37	3 0,23	5 0,34	- -	4 0,39
Ventricular septal defect	- -	1 0,06	3 0,37	3 0,23	2 0,13	1 0,05	2 0,19
Sinus arrhythmia	1 0,11	1 0,06	- -	- -	1 0,06	- -	2 0,19
Right bundle branch block	- -	- -	3 0,37	6 0,46	- -	3 0,16	- -
Sinus bradicardia	- -	- -	- -	2 0,15	- -	1 0,05	- -

Heart attack	- -	- -	2 0,25	1 0,07	- -	- -	- -
Mitral stenosis	1 0,11	- -	1 0,12	- -	1 0,06	- -	1 0,09
Aortic stenosis	- -	- -	- -	2 0,15	- -	1 0,05	1 0,09
Left ventricular hypertrophy	- -	- -	- -	2 0,15	- -	1 0,05	- -
Hyperkinetic heart	- -	1 0,06	1 0,12	2 0,15	- -	2 0,11	- -
Marfan syndrome affecting the heart	1 0,11	- -	- -	1 0,07	- -	- -	- -
Orthostatic hypotension	- -	- -	- -	- -	2 0,13	- -	- -
Atrio-ventricular block	- -	- -	- -	1 0,07	- -	- -	- -
W.P.W. syndrome	- -	- -	1 0,12	1 0,07	- -	- -	- -
Extrasistolic ventricular arrhythmia	- -	1 0,06	1 0,12	1 0,07	- -	- -	- -
Atrial flutter	- -	- -	- -	- -	- -	1 0,05	- -
Aorta aneurism	1 0,11	- -	- -	- -	- -	- -	- -
Circulation disorders	- -	- -	- -	- -	- -	1 0,05	- -
Chronic pericarditis	- -	- -	1 0,12	- -	- -	- -	- -
Arterial channel persistence	- -	- -	- -	1 0,07	- -	- -	- -

Left lateral accessory fasciculus	- - -	- - -	- - -	1 0,07 -	- - -	- - -	- - -
Total pupils examined	**867**	**1500**	**800**	**1300**	**1433**	**1785**	**1023**
Total cases of disease	**16**	**40**	**62**	**70**	**53**	**51**	**36**
General prevalence %	**1,84**	**2,66**	**7,75**	**5,38**	**3,69**	**2,85**	**3,51**

2. GENERAL PREVALENCE FOR CHRONIC CARDIOVASCULAR DISEASES, DURING THE PERIOD 2000-2006

General prevalence for chronic cardiovascular diseases diagnosed with the occasion of periodical and general medical examinations of pupils aged 6-18 during 2000-2006, is situated between 1.84% in 2000 and 7.75% in 2002.

The trend for general prevalence increased during 2000-2002 and decreased during 2002-2005 and then increased again in 2006 (Figure 1).
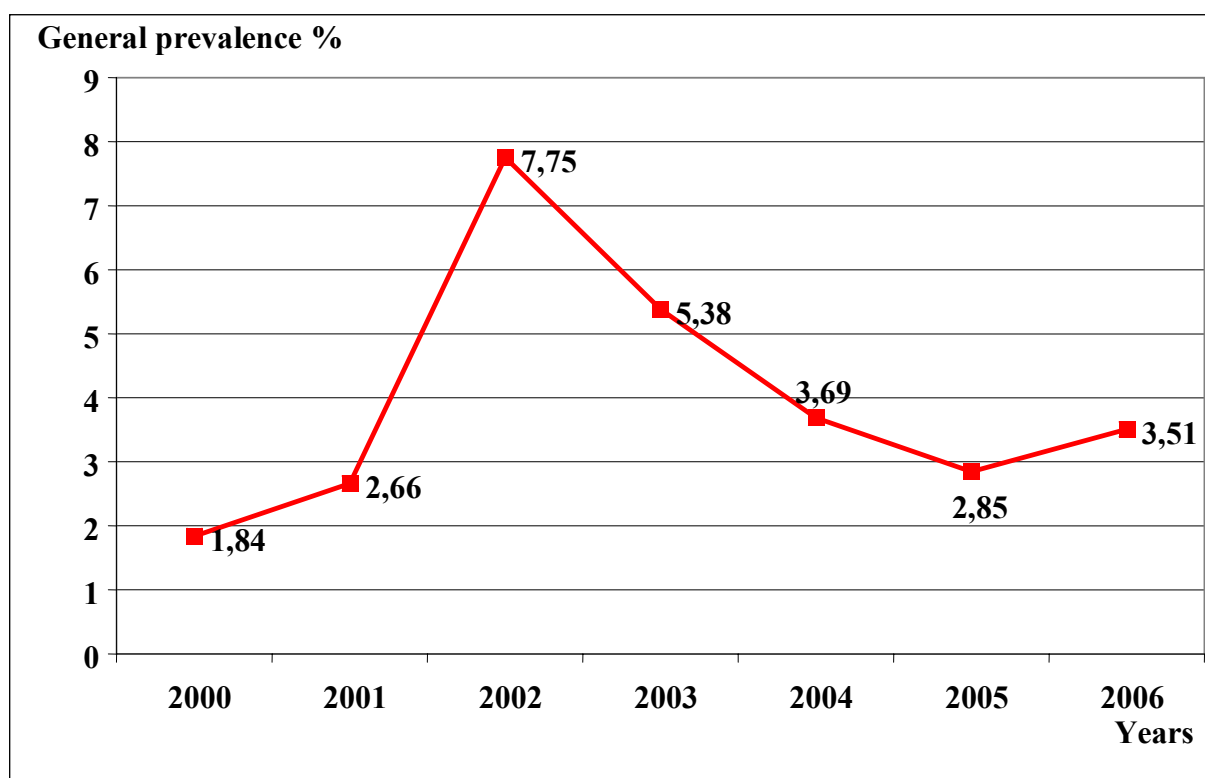

Figure 1. The dynamic of general prevalence for the chronic cardiovascular diseases for pupils aged 6-18, in the period 2000-2006

3. THE PERCENTAGE OF CARDIO-VASCULAR CHRONIC DISEASES

In the period 2000-2006, 26 chronic cardiovascular diseases have been diagnosed and a total of 328 patients within pupils aged 6-18.

From the point of view of percentage, the most frequent cardiovascular chronic diseases resulted in the classification below (Table 2): Mitral valve prolapse, 38.71%; Congenital cardiac miopy and Sinus tachycardia, 9.14% each; Arterial hypertension, 8.53%; Systolic murmur, 8.23%; Atrial septal defect, 5.48%; Ventricular septal defect and Right bundle branch block, 3.65% each.

Table 2. The percentage of cardiovascular chronic diseases in the case of pupils aged 6-18

Cardiovascular diseases	Number of cases	Percentage %
Mitral valve prolapse	127	38,71
Congenital cardiac miopy	30	9,14
Sinus tachycardia	30	9,14
Arterial hypertension	28	8,53
Systolic murmur	27	8,23
Atrial septal defect	18	5,48
Ventricular septal defect	12	3,65
Sinus arrhythmia	12	3,65
Right bundle branch block	5	1,52
Sinus bradicardia	3	0,91
Heart attack	3	0,91
Mitral stenosis	4	1,21
Aortic stenosis	4	1,21
Left ventricular hypertrophy	3	0,91
Hyperkinetic heart	6	1,82
Marfan syndrome affecting the heart	2	0,60
Orthostatic hypotension	2	0,60
Atrio-ventricular block	1	0,30
W.P.W. syndrome	2	0,60
Extrasistolic ventricular arrhythmia	3	0,91
Atrial flutter	1	0,30
Aorta aneurism	1	0,30
Circulation disorders	1	0,30
Chronic pericarditis	1	0,30
Arterial channel persistence	1	0,30
Left lateral accessory fasciculus	1	0,30
Total	**328**	**100,00**

4. SPECIFIC PREVALENCE AND DYNAMIC OF CASES OF MITRAL VALVE PROLAPSE

4.1. Specific prevalence of cases of mitral valve prolapse (Figure 2)
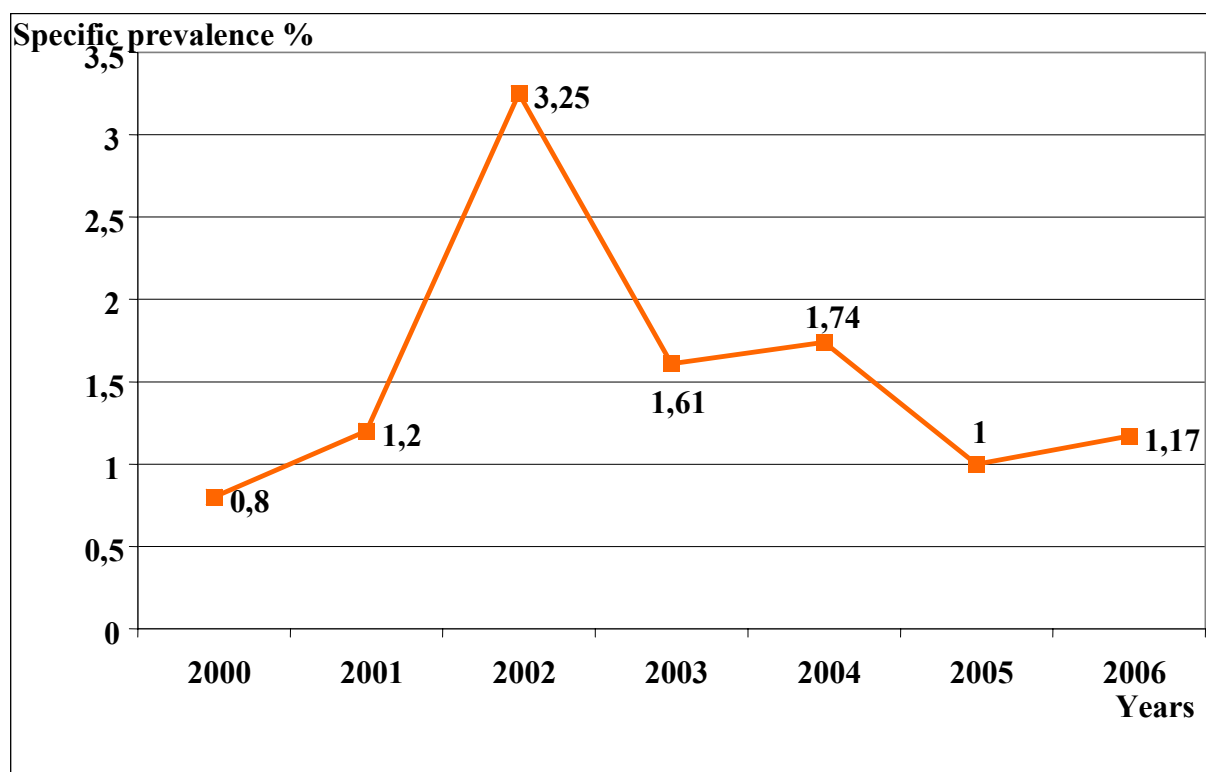

Figure 2. Specific prevalence of the mitral valve prolapse for pupils aged 6-18, in the period 2000-2006

Specific prevalence for mitral valve prolapse was situated between 0.80% in 2000 and 3.25% in 2002.

4.2. The dynamic of cases of mitral valve prolapse (Table 3, Figure 3,4)

Table 3. Classification of cases of mitral valve prolapse for pupils aged 6-18

Age (years old)	Cases of mitral valve prolapse (2000-2006)						
	2000 Number %	**2001 Number %**	**2002 Number %**	**2003 Number %**	**2004 Number %**	**2005 Number %**	**2006 Number %**
14	3 42,85	9 50,00	8 30,76	6 28,57	7 28,00	6 33,33	3 25,00
15	1 14,28	3 16,66	6 23,07	3 14,28	3 12,00	2 11,11	3 25,00
16	1 14,28	1 5,55	5 19,23	1 4,76	4 16,00	5 27,77	2 16,66
17	0 0,00	2 11,11	2 7,69	6 28,57	9 36,00	1 5,55	2 16,66
18	1 14,28	1 5,55	3 11,53	3 14,28	1 4,00	2 11,11	1 8,33

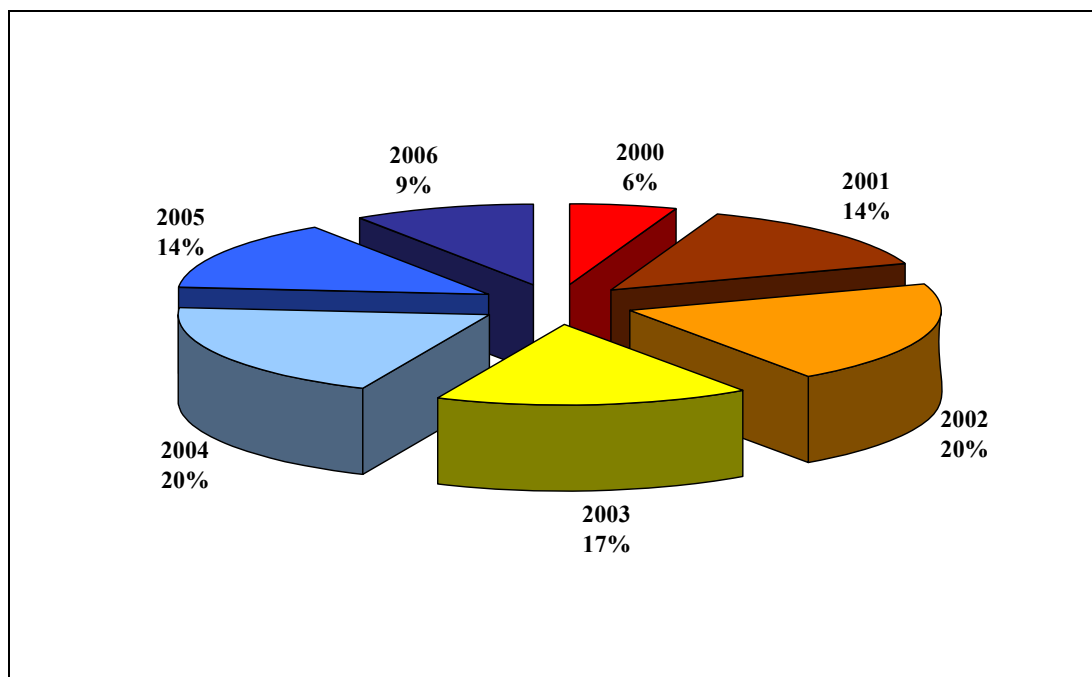| 19 | 1 | 2 | 2 | 2 | 1 | 2 | 1 |
	14,28	11,11	7,69	9,52	4,00	11,11	8,33
Total	7	18	26	21	25	18	12
	100,00	100,00	100,00	100,00	100,00	100,00	100,00

Figure 3. Percentage of cases of mitral valve prolapse for pupils aged 6-18, for the study period
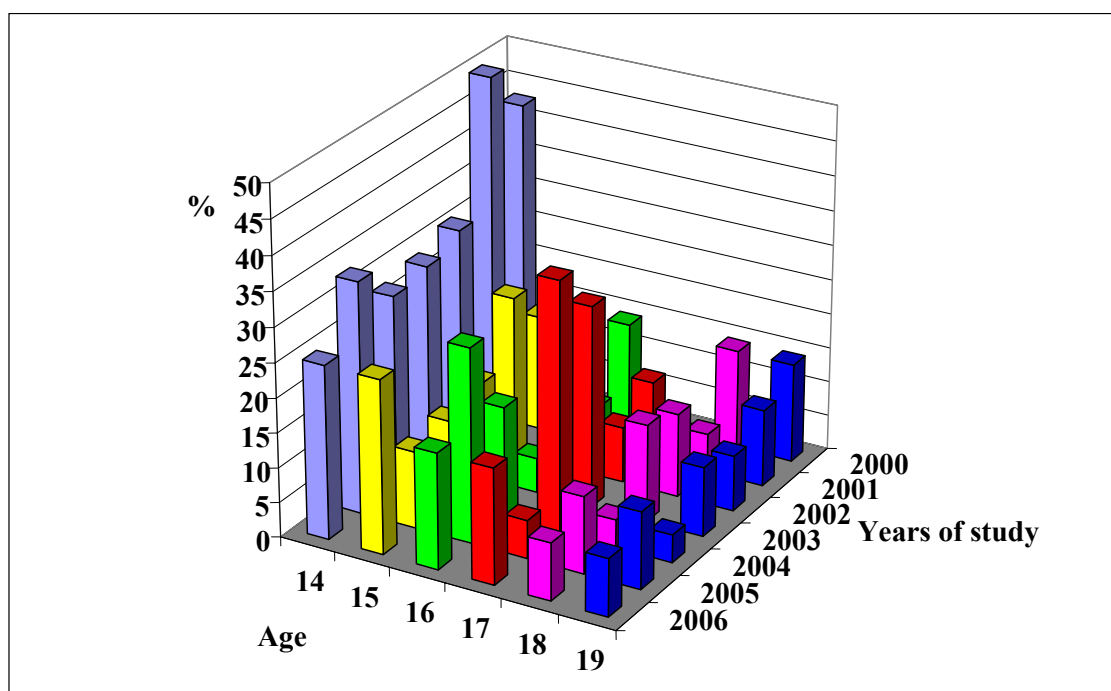

Figure 4. Percentage of cases of mitral valve prolapse for pupils aged 6-18, classified according to years of study and age

Regarding the years of study, the percentage of cases of mitral valve prolapse was situated between 6% in the year 2000 and 20% in the years 2002, 2004.

Regarding the age and study years, the percentage of the cases was variable: 42.8% as opposed to 0% in 2000; 50% as opposed to 11.1%, in 2001; 30.7% as opposed to 7.6%, in 2002; 28.5% as opposed to 4.7%, in 2003; 36% as opposed to 4%, in 2004; 33.3% as opposed to 5.5%, in 2005; 25% as opposed to 8.3%, in 2006.

The mitral valve prolapse (MVP) frequently appears as a primary entity that is not associated with other diseases. Sometimes it is associated with the Marfan syndrome, Ehlers Danlos syndrome, atrial septal defect [8, 9].

Pathology. A myxomatosis proliferation can be observed in the mitral valve in which the spongious composition is unusually prominent.

Clinical manifestations. MVP has an important hereditary component; some of the patients receive it hereditarily. Many of the patients do not present symptoms ever but some have palpitations, neuro-psychical symptoms and autonomous dysfunctions. The patients can present pre-syncope, syncope, palpitations, abdominal discomfort, chest pain and, in cases of severe regurgitation, heart failure. At a physical examination, an astenic habitus can be observed as well as hypotension. When listening to the chest, the mezosistolic cycle can be heard and sometimes a mezosistolic murmur for associated mitral regurgitation [10,11].

Paraclinical investigations:
- ECG is usually normal. A small percentage of patients can present negative T waves or modifications which are not specific to the ST segment in inferior or anterior derivations. A large spectrum of cardiac

arrhythmia was observed in patients with MVP. These include atrial extrasystole, ventricular extrasystole, as well as bradicardia and various degrees of blocks. The mechanism of arrhythmia in MVP is not fully clear. Diastolic depolarization of the mitral valve because of the extension of the valve in the left atrium may play a role in this sense. The most frequent tahiarrhythmia in MVP is the paroxistical supraventricular tachycardia.
- Echocardiography is the key to the diagnose. The posterior move of the posterior VM or of both valves in the atrium, exceeding by 2 mm the atrio-ventricular line. Other elements for the diagnose are: the thickening of the valve over 5 mm, valve redundancy, U-aspect or of a hammock of the valve. The presence of a mitral regurgitation and its degree can be seen by a Doppler examination [12].

Treatment. The patients who do not present symptoms, only anxiety, will be encouraged towards the favorable prognostic. A healthy, normal lifestyle will be recommended and monitoring by a cardiologist every three months. The patients with systolic murmur will be monitored every 12 months. The profilaxy of infectious endocarditis will be recommended. In the case of patients with palpitations, syncope, prolonged QT interval electrophysiological studies are indicated because of the risk of sudden death. The patients with abdominal discomfort and arrhythmia benefit from beta-blockers. Ablation by radiofrequency of the access ways which induce arrhythmia by re-entering is efficient in the selected cases. The MVP and severe mitral insufficiency patients need valve prosthesis [13-15].

CONCLUSIONS

1. Chronic morbidity in communities of pupils is an indirect indicator of the state of health. A good discovery of the cardiovascular chronic problems offers the possibility of monitoring the child/teenager by periodical medical examinations, drug

treatment or surgery, hygienically care and diet for preventing complications.

2. In the case of pupils aged 6-18, in a 7 year period, 26 chronic cardiovascular diseases have been diagnosed and a total of 328 patients within pupils aged 6-18. From the point of view of percentage, the first five cardiovascular chronic diseases were: Mitral valve prolapse, 38.71%; congenital cardiac miopathia and Sinus tachycardia, 9.14% each; Arterial hypertension, 8.53%; Systolic murmur, 8.23%.

3. Cases of mitral valve prolapse, the most frequent cardiovascular disease in the case of the studied pupils, present the specific

prevalence between 0.80% in 2000 and 3.25% in 2002. From the point of view of age, there were more cases within 14 year olds and fewer cases within the 19 year olds.

4. The 328 cases of cardiovascular diseases that were diagnosed have been monitored and treated with the purpose of total recovery (sometimes impossible) or partial recovery.

5. The efficiency of the medical activity performed for cardiovascular chronic patients treated both curatively and preventively was represented by the favorable evolution of the children and teenagers in the study period, 2000-2006.

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WEATHER EFFECTS ON THE DIARRHEAL DISEASES INCIDENCE

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REZUMAT

Condiţiile meteorologice contribuie indirect la creşterea incidenţei bolilor diareice acute. Metodele statistice de analiză utilizate au permis a cuantifica relaţiile reciproce între creşterea incidenţei prin bolile diareice acute cu temperatura aerului şi suma precipitaţiilor atmosferice. Rezultatele ne indică că, în perioada cu temperaturi înalte cca 50% din numărul crescut de cazuri de boli diareice acute, într-o anumită perioadă, sunt determinate de efectele combinate a parametrilor meteorologici. Relaţiile stabilite a acestor raporturi pot contribui la efectuarea pronosticului incidenţei bolilor diareice acute în lunile cu risc sporit a anului şi, astfel, a întreprinde măsuri profilactice adecvate pentru diminuarea acestui impact.

Cuvinte cheie: bolile diareice acute, condiţiile meteorologice, metode de analiză statistică

ABSTRACT

Weather conditions are indirectly increasing the diarrheal diseases (DD) incidence. The statistical methods of analysis used allowed quantifying the relationships between the increase of DD incidence and the air temperature and precipitation. The results showed that during the warm period the increase of about 50 % of diarrhea cases is caused by the combined effects of temperature and precipitation. The established relationships allow forecasting the incidence of diarrheal diseases in the «dangerous» months of the year and also developing in the near future adequate preventive measures.

Keywords: diarrheal disease, weather conditions, statistical analysis methods

INTRODUCTION

Many infectious diseases are sensitive to either temperature or precipitation, showing strong seasonal variation in numerous sites. Many diarrheal diseases (infectious intestinal disease) peak in cases during the hottest months of the year [1]. The temperature and the relative humidity directly influence the rate of replication of bacterial and protozoan pathogens and the survival of enteroviruses in the environment. Rainfall, and especially heavy rainfall events, may affect the frequency and the level of contamination of drinking-water. The relative importance of the various pathogens that cause diarrhea varies between locations and is greatly influenced by the level of sanitation. Several studies have described climate effects on specific

diarrhoea pathogens [2]. Pathogens vary related to the severity of clinical symptoms and the likelihood that they will be reported to health services. The number of cases reported either through clinics or laboratory-based surveillance therefore only represents a small proportion of the total disease burden, especially for diseases that are not severe. Further, relationships between climate and disease derived from passive reporting may differ from those based on other methods of surveillance.

Weather conditions could greatly influence water resources and sanitation in situations where the water supply is effectively reduced. Drought events can lead to an increased concentration of pathogenic organisms in raw water supplies. In addition, water scarcity may necessitate using sources of fresh water of poorer quality, such as rivers, which are often contaminated. Increases in rainfall may cause flooding and overwhelming the sewerage systems. All these factors could result in an increased incidence of disease [1,3].

MATERIALS AND METHODS

As an illustration of one of the quantitative estimations of the direct weather effects on human health we have analyzed relationships between the frequency of acute intestinal infectious diseases with the mean monthly temperature and precipitation in Chisinau for 1995-2008 (weather information available at: http://meteo.ru). The research methods were the following – a simple pair correlation of incidence with mean monthly air temperature and precipitation by [4], polynomial regression and multiple regressions using the appropriate procedures of special software Statgraphics Plus 2.1 [5]. As initial material for the incidence were taken data on the absolute cases of diarrheal diseases with established and unestablished etiology for the total population, as well as separately for children aged 0 to 17 years old.

RESULTS AND DISCUSSION

To assess the long-term situation for diarrheal disease incidence the trends were constructed, the parameters of which indicate on a stable increase in incidence, both among all population and the child population, at 1.2 cases per month on average (Figure 1).
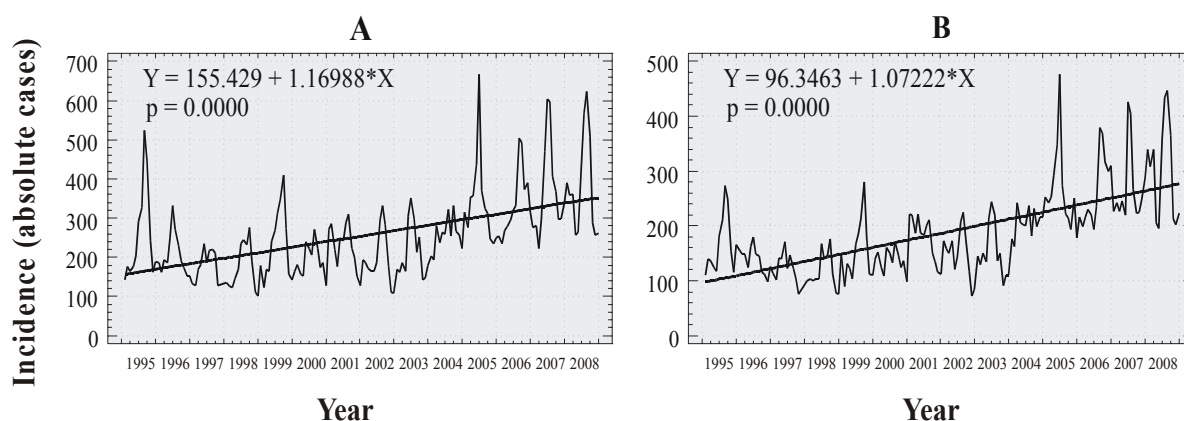

Figure 1. The dynamics and trends of the incidence of acute intestinal diseases in Chisinau for 1995-2008 (A – total population, B – Children 0-17 years)

Given a priori that one of the factors of the incidence of diarrheal diseases increasing is weather conditions such as temperature and precipitation, we carried out a regression analysis to confirm or refute this relationship. A simple regression of deviations from the trend in the incidence of annual air temperature has shown that a 32% increase in the number of cases of acute intestinal diseases (AID) for the total population is due to the temperature factor, and at a rather high correlation coefficient (r=0.565) and 99% confidence interval (Table 1). In other words, the temperature's increase of 1ºC leads to an increase in the incidence of 2.3% per month on average. For child population these rates are lower, but still very significant statistically

(r=0.354 and 1.3% increase in cases, respectively). In turn, the correlation analysis of the dependence of diarrhea incidence variation on precipitation sum showed a very weak, although statistically significant relationship (r=0.243 for the total population and r=0.139 for the child population).

Similar analysis for separately taken AID with established and unestablished etiology shows the same tendencies, moreover comparable with national estimates [4], i.e. moderately strong relationship of the increasing incidence with air temperatures and precipitation for the total population and a relatively weak one for the child population.

Table 1. Relationship between deviations from the trend of acute intestinal diseases (AID) incidence and mean air temperature (T) and precipitation sum (P) in Chisinau (1995-2008)

Nosology	Regression parameters				Relative response on meteorological parameter change on 1 unit of measure, %
	r	R^2, %	*p*	*coefficient*	
AID with established aetiology with T:					
total	0.424	18.02	0.0000	1.483	1.89
children	0.268	7.17	0.0005	0.806	1.22
AID with unestablished aetiology with T:					
total	0.532	28.34	0.0000	4.520	2.54
children	0.338	11.4	0.0000	1.562	1.28
AID with established aetiology with P:					
total	0.206	4.23	0.0091	0.168	0.21
children	0.169	2.86	0.0325	0.116	0.17
AID with unestablished aetiology with P:					
total	0.234	5.46	0.0029	0.426	0.24
children	0.093	0.86	0.2436	0.104	0.08
AID in total with T:					
total	0.565	31.91	0.0000	5.801	2.26
children	0.354	12.551	0.0000	2.368	1.26
AID in total with P:					
total	0.243	5.91	0.0020	0.595	0.23
children	0.139	1.92	0.0803	0.220	0.12

There is no doubt that the air temperature and precipitations of different months affect the incidence of diarrhea change in different ways and to a variable degree. To exclude the influence of seasonal fluctuations and long-term trend the annual course of mean monthly incidence was approximated by polynomials of different degrees. Maximum

coefficient of determination, adjusted by the number of significant variables in the model (R2a), and statistical significance of the model (minimum p-value) served as the criterion for selecting the best polynomial regression (Table 2). As it can be seen, the polynomial of 4th degree describes this dependence in the best way (Figure 2).
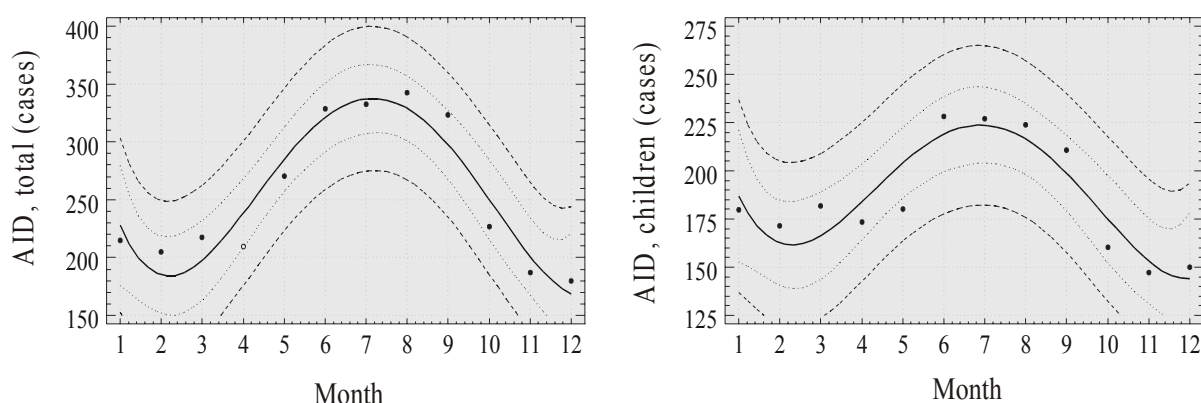
Table 2. Selection of polynomial regressions of the diarrhoea incidence' dependence on the month of year

Nosology	Polynomial order					
	2nd		3rd		4th	
	R^2a	p	R^2a	p	R^2a	p
AID, total	55.86	0.0102	69.61	0.0053	86.07	0.0009
AID, children	45.69	0.0260	52.72	0.0293	72.67	0.0085

r – regression coefficient
R^2 – determination coefficient
R^{2a} – adjusted determination coefficient
p-value below 0.05 (0.10) shows statistical significance of relationship at 95% (90%) confidence level

Figure 2. Graphs of 4th-order polynomial dependence of diarrhoea incidence on the month with 95% confidence interval

Thus, the selected polynomial regression smoothes by reliable way the long-term trend and excludes seasonal fluctuations of AID incidence. To determine the influence of weather conditions on the change of the incidence of diarrheal diseases, we carried out a multiple regression analysis of incidence deviations from the polynomial on the monthly air temperature and precipitation for each month of the year. The results showed (Table 3) that the statistically significant relationship between the incidence increasing and weather is settled in May, when the growth in air temperature and precipitation activates the pathophysiological mechanisms of diarrheal disease pathogens – about 50% of the AID increase due to temperature and precipitation raising. "Peaks" of effect occur in July (the hottest month of the year) and September-October, when it is the second "fruit season" (statistically significant relation at the level of 90-95%).

Table 3. The coefficients of determination (R2) and statistical significance (p) of multiple regression of deviations in the diarrhoea incidence on the mean monthly temperature and precipitation in Chisinau (1995-2008)

Month	Total		Children (0-17 years old)	
	R^2	p	R^2	p
January	10.53	0.5424	6.89	0.6752
February	2.05	0.8922	1.62	0.9142
March	1.38	0.9262	9.78	0.5678
April	1.32	0.9294	0.98	0.9473
May	45.67	0.0349	25.53	0.1977
June	29.65	0.1445	26.45	0.1845
July	47.01	0.0418	36.03	0.1071
August	25.68	0.2271	24.50	0.2453
September	57.15	0.0144	52.19	0.0250
October	64.21	0.0059	64.79	0.0054
November	11.48	0.5777	7.39	0.7079
December	13.16	0.5300	8.67	0.6650

By multiple regression coefficients (Table 4) we can estimate the incidence response to the mean air temperature and precipitation change in a given month. For the total population July and October are the most "dangerous" months – increase of 42 and 50 cases of diarrhea, respectively (at a small negative coefficient of precipitation); for the child population such critical months are September and October (additionally 40 and 45 cases of diarrhea), when on the "season of fruit" the "season of knowledge" is applied – that is, the collective alimentation in educational institutions, which greatly increases the AID risks at failure to comply with sanitary rules and norms of storage, processing and consumption of food.

Table 4. Multiple regression equationş of diarrhoea incidence deviations on mean monthly air temperature and precipitation for the warm period 1995-2008

Month	Total	Children (0-17 years old)
	Equation	*Equation*
May	Dev = -454.691+21.2907*T+1.73507*P	Dev = -259.023+11.2457*T+0.966618*P
June	Dev = -954.269+40.1381*T+2.42573*P	Dev = -583.63+24.0284*T+1.75455*P
July	Dev = -968.699+41.9772*T-0.177723*P	Dev = -682.318+29.2066*T+0.0346363*P
August	Dev = -910.573+37.6316*T+1.25135*P	Dev = -697.872+29.3554*T+0.721402*P
September	Dev = -684.735+33.3866*T+0.354666*P	Dev = -671.609+40.4753*T+0.387353*P
October	Dev = -544.714+50.0028*T-0.272518*P	Dev = -483.023+45.3643*T-0.339232*P

Although the weather conditions are independent on Surveillance factors, however, it is possible and necessary to reduce their indirect impact. Also, it is necessary to note that a significant increase of the AID in this time of year serves for professionals as a precursor of deterioration of the epidemiological situation and the potential rise of cholera cases. Therefore, the established relations allow forecasting the incidence of diarrheal diseases in the "dangerous" months of the year and, thus, to develop in the near future adequate preventive measures that reduce the risk of

such pathologies [6]. However, in a warming climate these risks become more pronounced, while maintaining the current level of preventive medicine most likely increases the incidence of diarrhea. It is projected that by the mid 20-ies annual temperature will rise by 1.5 ℃ [7,8], thus, a growing incidence of diarrhea on 105 cases per year is more likely, and by the end of century, at the temperature growth on 4.1 ℃, an absolute excess would be of 282 cases! Under such assessments the role and importance of preventive medicine repeatedly increases as a priority public health tool.

CONCLUSIONS

1. The quantitative correlations between the increase of the incidence for acute intestinal infections with air temperature and precipitation as individual factors, as well as their combined impact were determined.
2. The results show that although the weather conditions are not the main determinants of acute intestinal infections, however, they are making a significant contribution (50%) in the overall epidemiological background in the warm season.
3. The estimated results can be extrapolated to other areas for evidence-based argumentation of preventive measures to prevent and reduce acute intestinal infections incidence.

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FACTORIAL CALCULATION OF THE LEVEL OF PHYSICAL ACTIVITY AND FURTHER PERSONALIZED RECOMMENDATION REGARDING CALORIC INTAKE

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REZUMAT

Introducere. Prevalenţa obezităţii a crescut în ultimele decade, ridicând totodată probleme majore de sănătate publică, atât pentru indivizi cât şi pentru societate. Reducerea ponderală este dificil de obţinut, dar când se produce, se asociază cu îmbunătăţirea stării de sănătate. Pentru obţinerea reducerii ponderale, valoarea totală a energiei consumate trebuie să depăşească aportul de energie prin dietă. Metodă. Utilizând calculul factorial al cheltuielii de energie la un grup de 16 studenţi de sexe diferite, cu vârste cuprinse între 19 – 26 ani şi indici de masă corporală diferiţi, cu compoziţii corporale diferite, am calculat nivelul individual de activitate fizică. De asemenea, grupul a răspuns la o serie de întrebări referitoare la obiceiurile alimentare individuale şi a fost supus unui examen clinic obiectiv, prelevându-se şi probe de ser pentru teste biochimice. Rezultate. După calcularea cheltuielii totale de energie, au fost făcute recomandări personalizate privind aportul de calorii prin alimentaţie şi constituirea dietei, ţinând cont de starea individuală de sănătate. Concluzii. Cu toate că datorită numărului mic de participanţi şi datorită nivelului înalt de educaţie al participanţilor grupul analizat nu este semnificativ din punct de vedere statistic, rezultatele obţinute neputând fi extrapolate la nivel de populaţie, această metodă de lucru poate fi extinsă la alte grupuri şi subgrupuri populaţionale cu diverse patologii asociate, pentru a putea face recomandări pentru un stil de viaţă sănătoasă.

Cuvinte cheie: scădere ponderală, cheltuiala totală de energie, stil de viaţă sănătos

ABSTRACT

Background. Obesity is becoming more prevalent and poses major health problems for individuals and societies. Weight loss is difficult, but when achieved, is associated with improved health outcomes. In order to achieve the weight loss, the total energy expenditure for everyday activities must exceed the intake of energy from the diet. Methods. Using factorial calculations of total energy expenditure for a group of 20 students, males and

females, within the ages 19 – 26, with different body mass indexes and body composition we had calculated the level of physical activity for each person. The group also responded a series of questions regarding personal food habits. Physical examination was performed and serum samples were taken from each student in order estimate the individual health status. **Results.** *Once the estimation total energy expenditure was calculated for each individual, personalized recommendation for caloric intake and diet constituting can be made. Also, the general behavior patterns were studied for this specific group regarding diet, physical activity and general health status.* **Conclusions.** *Although the research group was not statistically significant (due to the small number of participants and the higher level of education than the general population) and the results obtained cannot be extrapolated to the whole population, the method can be applied to other groups and sub-groups of population (with or without associated pathology) in order to make recommendations for a healthy lifestyle.*

   Keywords*: weight loss, total energy expenditure, healthy lifestyle*

INTRODUCTION

The prevalence of obesity has increased sharply during the past few decades, and this condition is now recognized as a major contributor to the global burden of disease.

Adiposity, or excess body fat, is often defined in terms of body mass index (BMI), which is calculated by dividing weight in kilograms (kg) by the square of height in meters (m). For adults, the World Health Organization (WHO) defines underweight as BMI <18.5, normal weight as BMI 18.5 to <25, overweight as BMI 25 to <30, and obesity as BMI _ 30 kg/m2 [1]. Using this standard, about half of European adults are overweight or obese, and urban areas of many developing countries have a similar prevalence. In the United States, two of every three adults are either overweight or obese. According to the U.S. National Health and Nutrition Examination Surveys (NHANES), although the percentage of adults in the overweight but not obese category has remained relatively stable for the past 30 years, there has been a doubling in obesity prevalence – from 14.5 to 32.2% – between 1980 and 2004 [2].

For children there are no definitions of overweight and obesity that are accepted worldwide. NHANES data indicate that the prevalence of childhood obesity in the United States, defined as a BMI _ 95th percentile for children of the same age and sex according to the 2000 Centers for Disease Control and Prevention Growth Charts, increased from approximately 6 to 16% between 1980 and 2004. Worldwide the prevalence of overweight and obesity has been increasing in both industrialized countries and urban areas of developing countries. WHO estimates that 400 million adults worldwide were obese in 2005; that number is projected to jump to 700 million by 2015 [1].

Although viewed more as a cosmetic than a health problem by the general public and some health-care professionals, excess weight is a major risk factor for chronic disease and other medical complications. Epidemiologic research has quantified the impact of overweight and obesity on premature mortality, cardiovascular disease (CVD), type 2 diabetes, osteoarthritis, gallbladder disease, some types of cancer, and other adverse outcomes.

Direct dose–response relationships between increasing BMI and lifetime risks of various conditions have been observed in nationally representative samples, such as NHANES, and in large cohorts followed for lengthy periods, such as the Nurses' Health Study, the Health Professionals Follow-up Study, and the Framingham Heart Study.

Causes of Overweight/Obesity

- Genetic Makeup

Genetic makeup determines susceptibility to overweight/obesity. Family studies by the National Institutes of Health (NIH) and the National Heart, Lung, and Blood Institute (NHLBI) have found that genetics may account for 25–40% of the difference in body mass, although twin studies suggest that the genetic contribution may be as high as 70% [3]. Many genes are likely to interact in complex ways in determining a person's weight. Heritable genes contribute to variations in adiposity observed within populations, but cannot account for large temporal variations that occur over a short time period.

The proportionate contribution of inherited genes, as opposed to environmental factors, depends on the amount of variation in food availability and physical activity level.

- Environmental Factors

The environment also plays a critical role in this process by influencing which susceptible individuals will go on to become overweight and obese. The importance of environmental factors in the development of overweight/obesity can be seen by the rapid rise in obesity throughout the world in the last few decades. In addition, it is well known that population groups who migrate from less developed to more developed countries tend to change their lifestyle habits, as well as become more prone to obesity and other chronic diseases, within a couple of generations. Environmental factors will explain most of the difference in body weight between two populations that differ widely on food availability (e.g., famine conditions vs. American fast-food customers), but a much smaller proportion if the external environments are similar. Lifestyle factors, including diet and physical activity, are important, modifiable causes of overweight/obesity.

A recent World Health Organization (WHO) and Food and Agricultural Organization (FAO) joint technical report concluded that there was convincing evidence that a diet rich in energy-dense, nutrient-poor foods was a cause of obesity [4]. These foods contribute to excessive caloric intake, which in turn leads to weight gain.

A sedentary lifestyle has also been implicated as a cause of obesity [4]. Less physically active individuals are more likely to gain weight over time. Many factors contribute to a sedentary lifestyle. It is increasingly common for people to have desk jobs that require minimal physical activity. People often drive to work, rather than walk or bicycle. Watching television and playing on the computer are prevalent leisure-time activities.

The role of the larger social environment in promoting obesity cannot be ignored. Individuals do not exist in a vacuum. Choices are shaped by social, cultural, and economic forces. Urbanization, globalization, and technological advancement are major trends that have spread around the world, leading to radical changes in the food supply, work, leisure-time activities, and transport. It has become cheap and easy to produce an abundance of highly processed foods that can be quickly distributed. These foods tend to be high in energy density and low in nutrient density. Their consumption is reinforced by often intensive media campaigns by food companies and fast-food restaurants.

Daily life has become increasingly mechanized. Work often involves sitting at a computer all day. Watching television, playing video games, and surfing the Internet are popular leisure-time activities. Cars make it easy for people to commute to work and school, even over long distances, with minimal energy expenditure. There is increasing evidence that the media plays an important role in promoting obesity. It has been hypothesized that the positive

association between television watching and obesity in children is at least partly mediated through advertising of high-energy, nutrient poor foods that targets children [4].

People are encouraged to choose nutrient-dense foods that have a high vitamin and mineral content relative to their number of calories. Nutrient-dense foods include whole grains, fruits, and vegetables. Consumption of foods with a low nutrient density should be restricted. These foods, which include saturated and trans fats, added sugars, and alcohol, provide few vitamins and minerals for their level of calories.

Keeping portion sizes in check is an issue in today's supersize culture. The Dietary Guidelines for Americans [5] recommend that people pay attention to how their portion sizes stack up against serving sizes given that overly large portions can contribute to the consumption of excess calories.

There is general agreement that for weight management it is the total number of calories that count, not their distribution.

The NHLBI guidelines make the point that lowering the amount of fat in the diet can help to reduce overall calories; however, reducing fat without reducing total calories, for example, by substituting carbohydrates for fat, is not effective for weight management [3].

The role of physical activity

Physical activity can be defined as any movement that substantially increases the amount of calories that an individual burns in a day. Walking, gardening, washing the car, dancing, raking, swimming, and jogging are all types of physical activity. However, as most people know, not all activities burn the same amount of calories. Activities that require modest energy expenditure and, therefore, burn fewer calories per hour are considered light or moderate, while those

that burn more calories per hour are considered vigorous or strenuous.

Optimal Level of Physical Activity for Overall Health

To derive the health benefits discussed above, epidemiologic evidence shows that individuals should engage in physical activity on a regular basis. For most health outcomes, there appears to be a dose–response relationship, with no lower threshold. What this means is that in terms of health benefits, some activity is better than none, and until extreme levels are reached, more is generally better. Given the mounting evidence that moderate physical activity confers many of the same health benefits as vigorous activity, many leading health organizations have adjusted their guidelines accordingly.

For example, the Surgeon General now recommends that people expend at least 150 calories per day (or 1000 calories per week). An expenditure of this amount can be achieved by walking briskly for 30 min per day or by engaging in more vigorous activity for a shorter duration (for example, 15 min of running at a pace of 10 min per mile) [6]. Both the Centers for Disease Control and Prevention and the American College of Sports Medicine offer similar guidelines, advising at least 30 min of moderate activity on 5 or more days per week. While this amount will yield significant benefit, further increases in physical activity will confer additional benefits and can be obtained by increasing the intensity, frequency, or duration of activity.

Strategies to Increase Physical Activity

Strategies to increase physical activity aim to alter one or more of the many factors that influence levels of activity. Using the ecological model of health behavior, Sallis and Owen (1999) have categorized these factors as follows:

- ➢ intrapersonal factors: factors that occur within the individual's mind or body, including biological, cognitive, and behavioral factors;
- ➢ social environment factors: social and cultural factors that promote or discourage a given behavior;
- ➢ physical environment factors: factors within the natural environment (such as weather or geography) or constructed environment (such as the transportation system or infrastructure for recreation) that promote or discourage a given behavior.

Most intervention research in the area of adult physical activity has focused on intrapersonal and social environmental influences and has taken place within the health-care setting, worksite, and community. However, there is now a shifting focus toward interventions and policies that address the physical environment as well [7].

MATERIAL AND METHOD

This study has as a departure point the grant "The evaluation of the risk behavior' dimension in high-school students and young people from vocational, college and university from Timis County" (CORT 2004) performed between 2003 – 2005 at the "Victor Babes" University of Medicine and Pharmacy Timisoara. The CORT 2004 has a transversal study design.

The study participants are students of the "Victor Babes" University of Medicine and Pharmacy Timisoara. They were included upon their consent after the study questionnaire, clinical examination and biological samples that will be performed were presented to the group.

16 students (representing 24,3%) from the initial group of 66 were recruited. Beside these 16 students another group of 34 students chose to participate in the food questionnaire, but they had refused to fill the physical activity level questionnaire and to give the biological samples. The data from the second group will not be used in this research paper.

A fragment of the CORT questionnaire was used to determine the eating behavior. Besides this, anthropometric measures such as height, weight, waist and hips circumference, and blood pressure were determined. The study participants had filled during a week a questionnaire for the determination of the level of physical activity. Also, blood sugar, triglycerides, total cholesterol and HDL cholesterol analysis were performed. After gathering and interpreting the individual data were presented to each student. Discussions regarding the diet constituting, the optimum level of physical activity for healthy, chronically ill people (diabetes, high blood pressure, cardiac malformations) and pregnancy and some healthy weight loosing techniques continues afterwards.

RESULTS

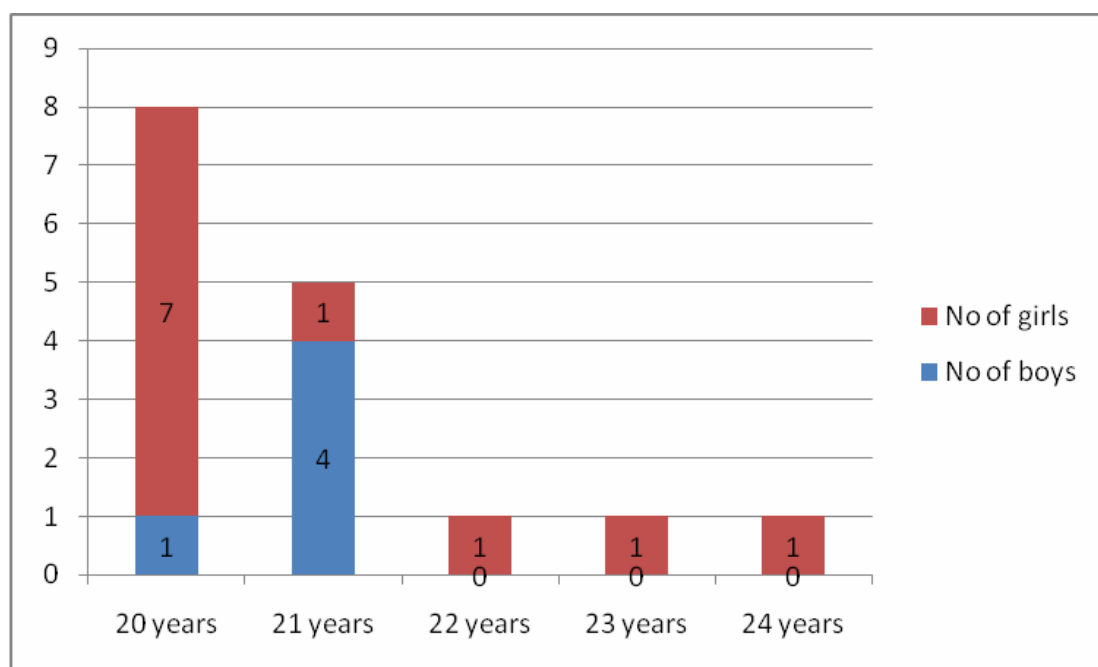The group was composed of 16 young people, between 20 and 24 years old.

Figure 1. The age distribution of participants

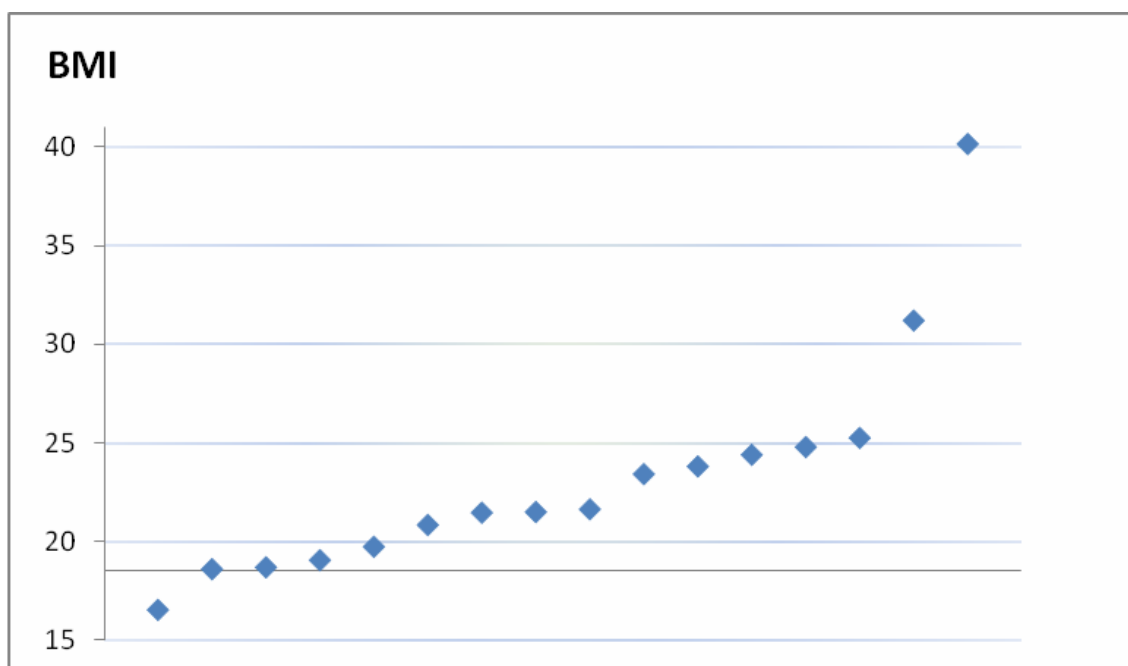The body mass index (BMI) values are presented in Figure 2.

Figure 2. The distribution of the BMI of participants

Most of participants (12, representing 75%) have a normal BMI, between 18,5 and 24,9. One person is underweight (BMI=16,53), an overweight person (IMC=25,24) and 2 obese (IMC=31,19 and respective IMC=40,12).
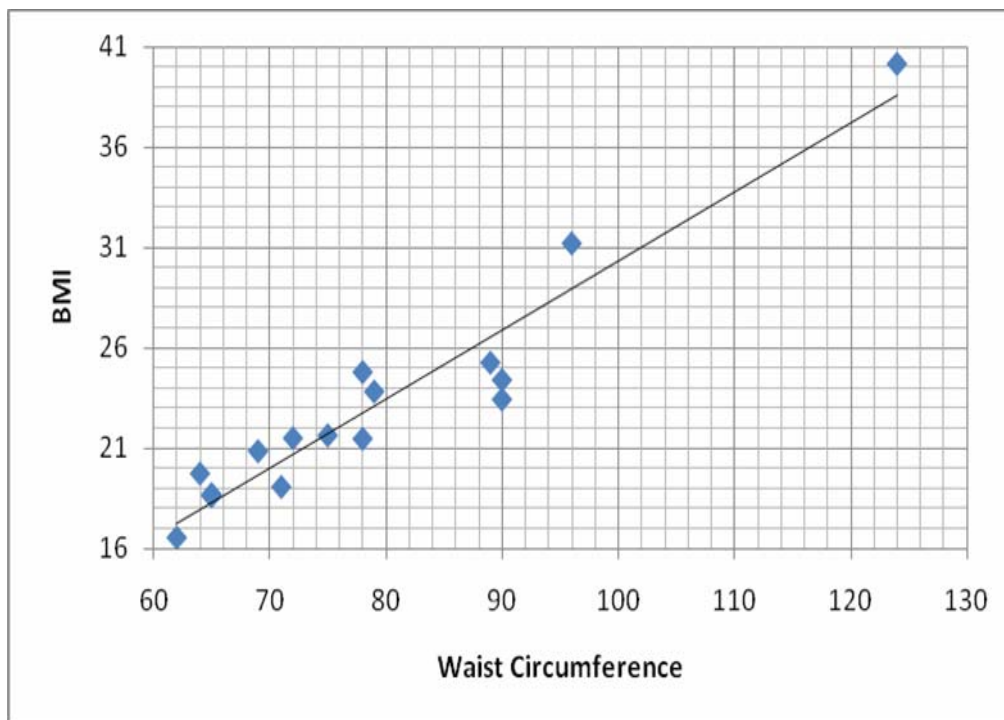
Figure 3. The BMI distribution depending on waist circumference

The Pearson correlation applied to these data shows an r=0.957 at p<0,01 and an r2=0,9158. So, the correlation between these two variables, BMI and waist circumference are strong positive correlated and the 91,58% of the BMI value can be predicted from the waist circumference value.

Using the factorial calculation the individual levels of energetic expenditure were calculated for each day and for each participant. The energetic expenditure is

varying from the minimal value of 1892,14 kcal spent to a maximum of 3585,43 kcal spent, with a media at 2407,55 kcal spent and a SD=500.

Using the intensity of physical activity for the classification of the life style we had found that 12 participants (75%) had a sedentary lifestyle, one participant has a moderate-active lifestyle and 3 students are performing a vigorous physical activity.
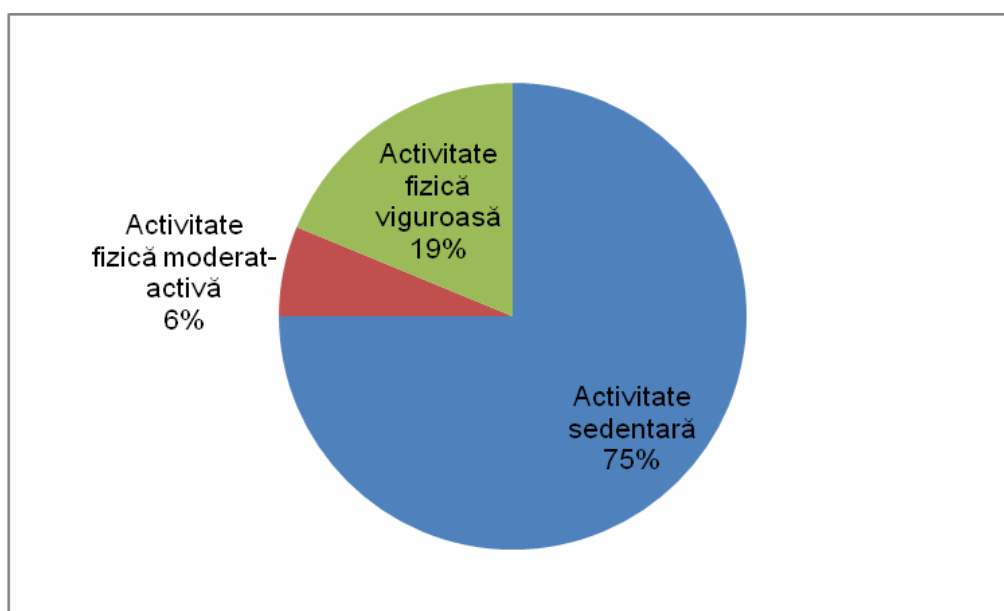
Figure 4. Student's repartition after the level of physical activity

Analyzing the data from sedentary participants we had found that for 3 students of 12 the level of physical activity is under the lower limit of physical activity level (1,4 – 1,69) proposed by the group of FAO/WHO/UNU experts for sedentary life style.
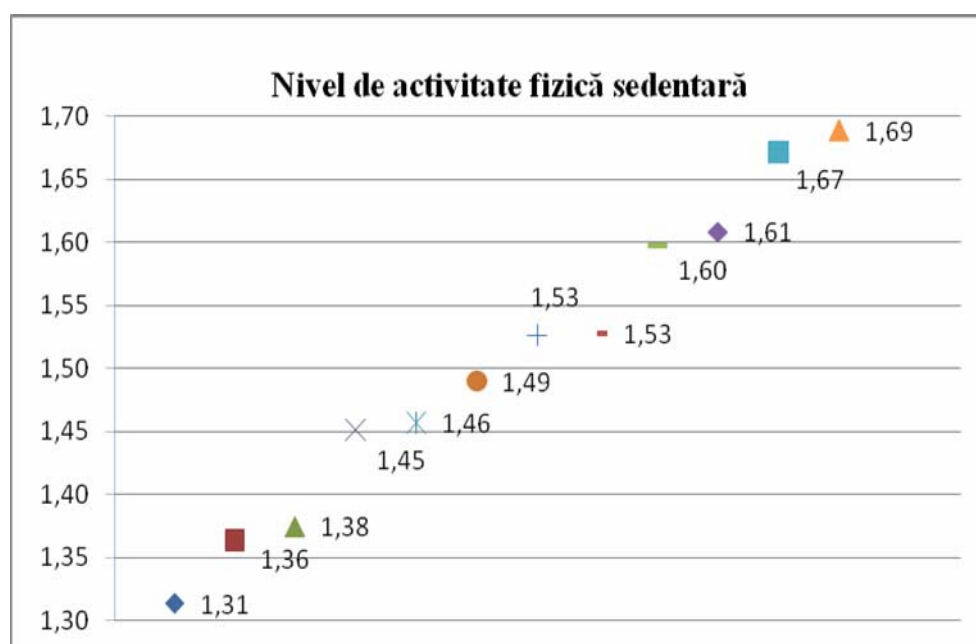

Figure 5. The distribution of the physical activity level for the sedentary lifestyle group

It is of interest to underline that the students that had BMI levels underneath or exceeding the normal values had sedentary lifestyle. Personalized recommendations were made for each student.
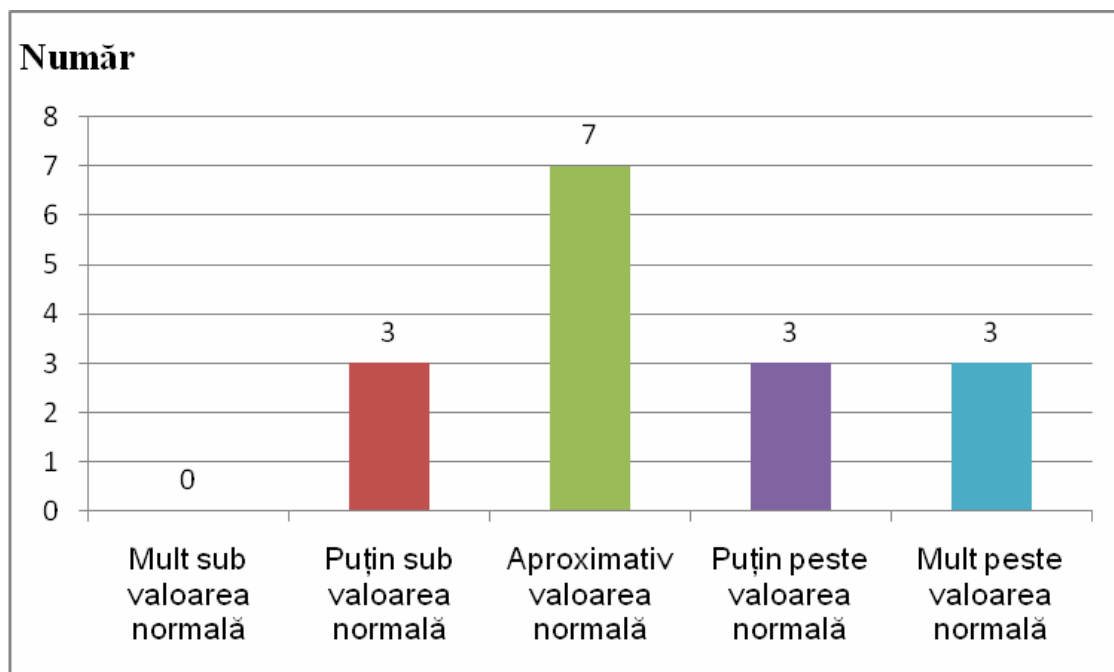
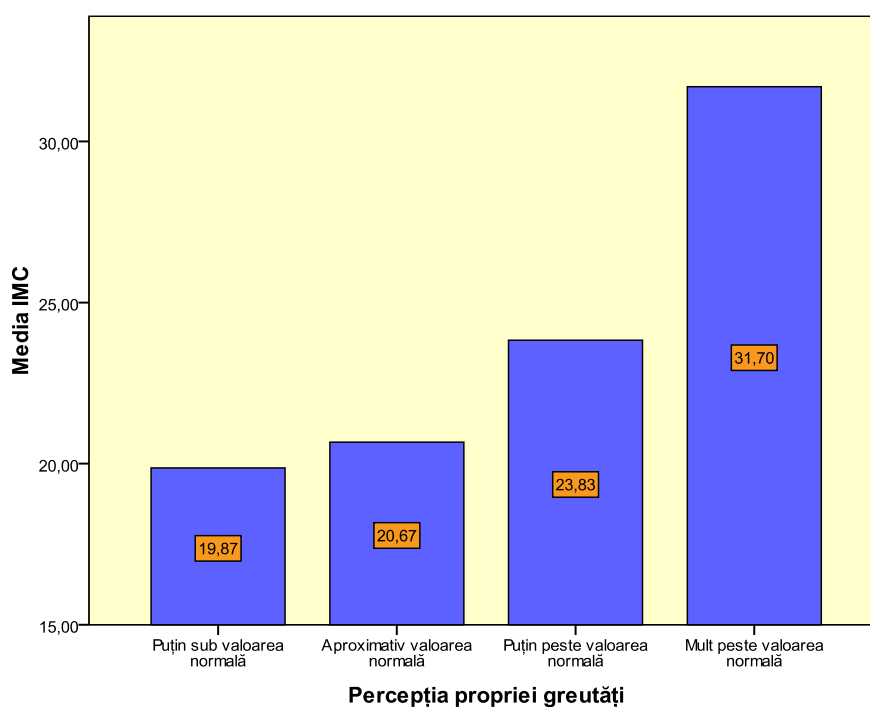**Figure 6. The specific answers to the question: "How are you perceving your weight?"**

Figure 7. Medium BMI for the specific answers to the question "How are you perceiving your weight?

The medium BMI values of the participants with specific answers "A little below normal values" and "A little over the normal values" are 19,87 and respective 23,83 kg/m2. These two values belong to the

normal values of the BMI and make us conclude that there are participants with BMI at the lower and upper border that are misperceiving their own weight.
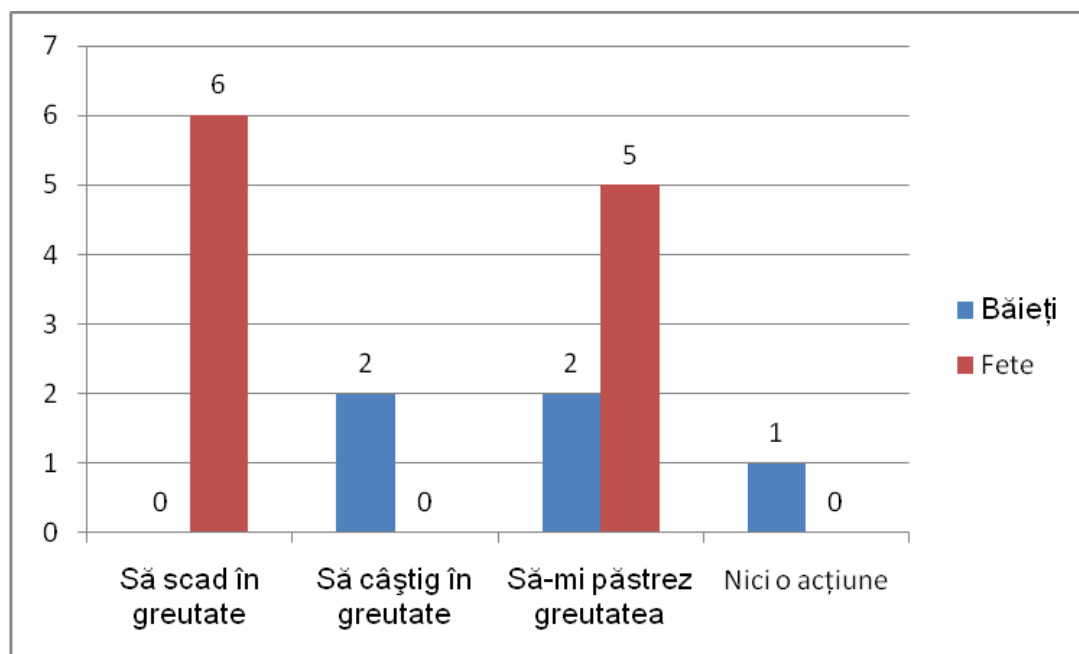

Figure 8. Graphical representation of specific answers to the question "What do you intend to do in near future towards the modification of your own weight?"

Some aspects of the answer to this question can be underlined: the option "to lose weight" was chosen only by girls (37,5%); the option "to gain weight" was chosen only by boys (12,5%). Depending on these specific answers we had made specific recommendations regarding the number of intake calories necessary for weight each one wants to have.

Using the Schofield's basal metabolism rate estimation tables the rate of basal metabolism was calculated for the actual weight and for the weight they want to have. Using the physical activity levels, previously obtained, the necessary intake of calories for those which want to maintain their weight, as well as for those which want to modify their weight was computed when the level of physical activity is kept constant.

Table 1. Recommended intake of calories for the achievement of "ideal" weight

ID.	Actual weight	BMR for actual weight	„Ideal" weight	BMR for „ideal" weight	Recommended intake of calories
6	55	1301,59	52	1257,14	2142,369
7	88	1790,58	70	1523,86	2434,638
8	64	1434,95	58	1346,04	2165,048
11	75	1821,48	65	1449,77	1993,434
15	57	1331,23	55	1301,59	1889,436
16	63	1420,13	58	1346,04	2272,651
4	74	1806,42	78	1866,65	4125,621
13	62	1405,32	70	1746,19	2918,403

Table 2. Recommended intake of calories for the maintenance of actual weight

ID	Actual weight	BMR for actual weight	Recommended intake of calories
1	54	1286,77	1874,857
3	89	2032,27	4622,937
5	45	1153,41	1760,701
9	52	1257,14	1873,372
10	50	1227,50	1673,93
12	79	1881,70	4685,216
14	57	1331,23	2033,818
2	130	2649,61	3481,556

CONCLUSIONS

Unlike the genetic factors, the diet and the level of physical activity are modifiable factors through adequate interventions. The inadequate composition of diet and sedentary lifestyle have an important contribution to the determinism of chronic diseases (obesity, diabetes, coronary heart disease, some cancers) with great impact on morbidity and mortality rates, especially in elders.

Recommendations towards improving the healthy eating behavior and sedentary behavior:

1. Adequate Nutrients within Calorie Needs
   - ✓ Consume a variety of nutrient-dense foods and beverages within and among the basic food groups while choosing foods that limit the intake of saturated and trans fats, cholesterol, added sugars, salt, and alcohol.

2. Weight Management
   - ✓ To maintain body weight in a healthy range, balance calories from foods and beverages with calories expended.
   - ✓ To prevent gradual weight gain over time, make small decreases in food and beverage calories and increase physical activity.

3. Food Groups to Encourage
   - ✓ Consume a sufficient amount of fruits and vegetables while staying within energy needs. 200 g of fruits and 250 g of vegetables per day are recommended for a reference 2,000 calorie intake, with higher or lower amounts depending on the calorie level.
   - ✓ Choose a variety of fruits and vegetables each day. In particular, select from all five vegetable subgroups (dark green, orange, legumes, starchy vegetables, and other vegetables) several times a week.
   - ✓ Consume at least 100 g of whole-grain products per day. In general, at least half the grains should come from whole grains.
   - ✓ Consume 500 g per day of fat-free or low-fat milk or equivalent milk products.

4. Fats
   - ✓ Consume less than 10 percent of calories from saturated fatty acids and less than 300 mg/day of cholesterol, and keep trans fatty acid consumption as low as possible.
   - ✓ Keep total fat intake between 20 to 35 percent of calories, with most fats coming from sources of polyunsaturated and monounsaturated fatty acids, such as fish, nuts, and vegetable oils.
   - ✓ When selecting and preparing meat, poultry, dry beans, and milk or milk products, make choices that are lean, low-fat, or fat-free.

   - ✓ Limit intake of fats and oils high in saturated and/or trans fatty acids, and choose products low in such fats and oils.

5. Carbohydrates
   - ✓ Choose fiber-rich fruits, vegetables, and whole grains often.
   - ✓ Choose and prepare foods and beverages with little added sugars or caloric sweeteners.
   - ✓ Reduce the incidence of dental caries by practicing good oral hygiene and consuming sugar and starch-containing foods and beverages less frequently.

6. Sodium and Potassium
   - ✓ Consume less than 2,300 mg (approximately 1 teaspoon of salt) of sodium per day.
   - ✓ Choose and prepare foods with little salt. At the same time, consume potassium-rich foods, such as fruits and vegetables.

7. Physical activity
   - ✓ Engage in regular physical activity and reduce sedentary activities to promote health, psychological well-being, and a healthy body weight.
   - ✓ To reduce the risk of chronic disease in adulthood: Engage in at least 30 minutes of moderate-intensity physical activity, above usual activity, at work or home on most days of the week.
   - ✓ For most people, greater health benefits can be obtained by engaging in physical activity of more vigorous intensity or longer duration.
   - ✓ To help manage body weight and prevent gradual, unhealthy body weight gain in adulthood: Engage in approximately 60 minutes of moderate- to vigorous-intensity activity on most days of the week while not exceeding caloric intake requirements.

✓ To sustain weight loss in adulthood: Participate in at least 60 to 90 minutes of daily moderate-intensity physical activity while not exceeding caloric intake requirements. Some people may need to consult with a healthcare provider before participating in this level of activity.

✓ Achieve physical fitness by including cardiovascular conditioning, stretching exercises for flexibility, and resistance exercises or calisthenics for muscle strength and endurance[6].

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THE QUANTITATIVE INFLUENCE OF SEDENTARY BEHAVIOR ON BODY MASS INDEX IN YOUNG ADULTS

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REZUMAT

Obezitatea reflectă modificările societăţii din ultimii 20 – 30 de ani care a creeat un mediu ce promovează sedentarismul şi consumul alimentelor cu conţinut crescut de grăsime şi cu conţinut ridicat de energie. Stilul de viaţă sedentar reduce cheltuiala de energie şi promovează creşterea în greutate. Studiul doreşte să evidenţieze influenţa cantitativă a orelor petrecute în faţa televizorului/calculatorului asupra indicelui de masă corporală, una din unităţile de măsură ale supraponderabilităţii/obezităţii.

Cuvinte cheie*: obezitate, sedentarism*

ABSTRACT

Obesity reflects the profound changes in society over the past 20 to 30 years that have created an environment that promotes a sedentary lifestyle and the consumption of a high-fat, energy-dense diet. A sedentary lifestyle lowers energy expenditure and promotes weight gain. The study wants to underline the quantitative influence of the hours spent in front of the TV/PC on the body mass index, one of the physical measures of overweight/obesity.

Keywords: *obesity, sedentariness*

INTRODUCTION

The prevalence of obesity and overweight is increasing in adults and children throughout the world. Television viewing has been associated with overweight, decreased physical activity, and unhealthy dietary behavior among children and adolescents, and may represent a modifiable cause of childhood obesity. Watching television expends the same energy as sitting quietly. [1]

A sedentary lifestyle lowers energy expenditure and promotes weight gain in both animals and humans. Restriction of physical activity in rats causes weight gain, and animals in zoos tend to be heavier than those in the wild. In an affluent society, energy-sparing devices in the workplace and at home reduce energy expenditure and may enhance the tendency to gain weight. In children there is a graded increase in BMI as the number of hours of television watching increases [2].

A number of additional observations illustrate the importance of decreased energy expenditure in the pathogenesis of weight gain. The highest frequency of overweight occurs in men in sedentary occupations. Estimates of energy intake and energy expenditure in Great Britain suggest

that reduced energy expenditure is more important than increased food intake in causing obesity [3].

According to the Surgeon General's Report on Physical Activity, the percentage of adult Americans participating in physical activity decreases steadily with age, and reduced energy expenditure in adults and children predicts weight gain. In the United States, and possibly other countries, the amount of time spent watching television is related to the degree of obesity in children; the number of automobiles is related to the degree of obesity in adults. Finally, the fatness of men in several affluent countries (the Seven Countries Study) was inversely related to levels of physical activity [4].

Overweight and obesity are associated with a sedentary lifestyle in the general population. Prospective studies show that a lower level of physical activity predicts weight gain in the following years [5]. The increase of physical activity is thus a crucial target for prevention of obesity [6].

Strategies to increase physical activity aim to alter one or more of the many factors that influence levels of activity. Using the ecological model of health behavior, Sallis and Owen (1999) have categorized these factors as follows:

- intrapersonal factors: factors that occur within the individual's mind or body, including biological, cognitive, and behavioral factors;
- social environment factors: social and cultural factors that promote or discourage a given behavior;
- physical environment factors: factors within the natural environment (such as weather or geography) or constructed environment (such as the transportation system or infrastructure for recreation) that

promote or discourage a given behavior [7].

Most intervention research in the area of adult physical activity has focused on intrapersonal and social environmental influences and has taken place within the health-care setting, worksite, and community. However, there is now a shifting focus toward interventions and policies that address the physical environment as well.

MATERIAL AND METHOD

This study is based on the grant "The evaluation of risk behavior dimension in high school students and young people from vocational schools and universities in Timis County" (CORT 2004), carried out between 2003-2005, cod CNCSIS 1167, attained at The University for Medicine and Pharmacy Timisoara. The CORT 2004 study is a transversal epidemiologic survey assessing risk behavior in a group of young people attending the colleges and universities in Timis County. The participants were included in this study based on their free consent.

We used a fragment of the CORT questionnaire consisting of the questions referring to the time spent performing sedentary activities like watching TV and working at a computer, and their knowledge of the consequences of sedentary behavior. In addition, the participants were requested to fill in their height and weight, these being used for the calculation of the Body Mass Index (BMI), which is weight in kilograms divided by height in meters square. Data were introduced in a data base and were interpreted in the SPSS 17 program.
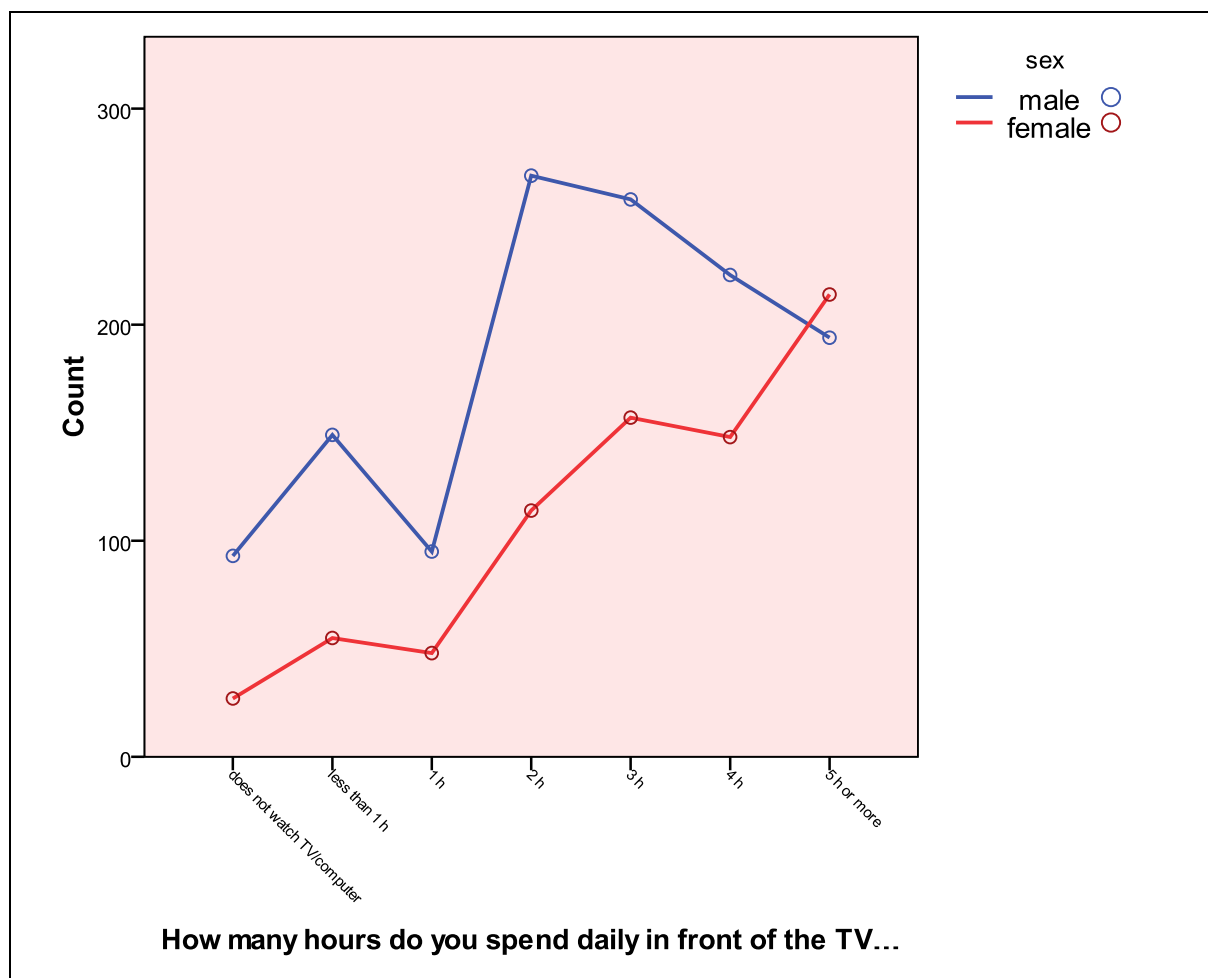
RESULTS

Figure 1. The distribution of the students by genders regarding the time spent watching TV/computer

The sample was analyzed regarding the time spent with sedentary behavior like watching the television and working at the computer. There were statistically significant differences between the genders $\chi2=71853$, p=0,000 and the gender was a determinant of the time spent with sedentary activities.

Their behavior raises concerns because 214 girls representing 27,5% from all the girls in the study and 194 boys representing 15% from all the boys the study are spending at least 5 hours every day with sedentary activities.

When we asked the students if they had learned about the consequences of sedentary behavior, just 609 students, representing 29,3% replied yes.

Furthermore we wanted to see if there is a correlation between the knowledge about the effects of sedentary behavior and how much time did they spent in front of TV/computer. The Spearman correlation showed a significant negative correlation $\rho= - 0,052$, p<0,05. This test shows that people not knowing about the effects of sedentary behavior tend to spend more time having sedentary behavior.
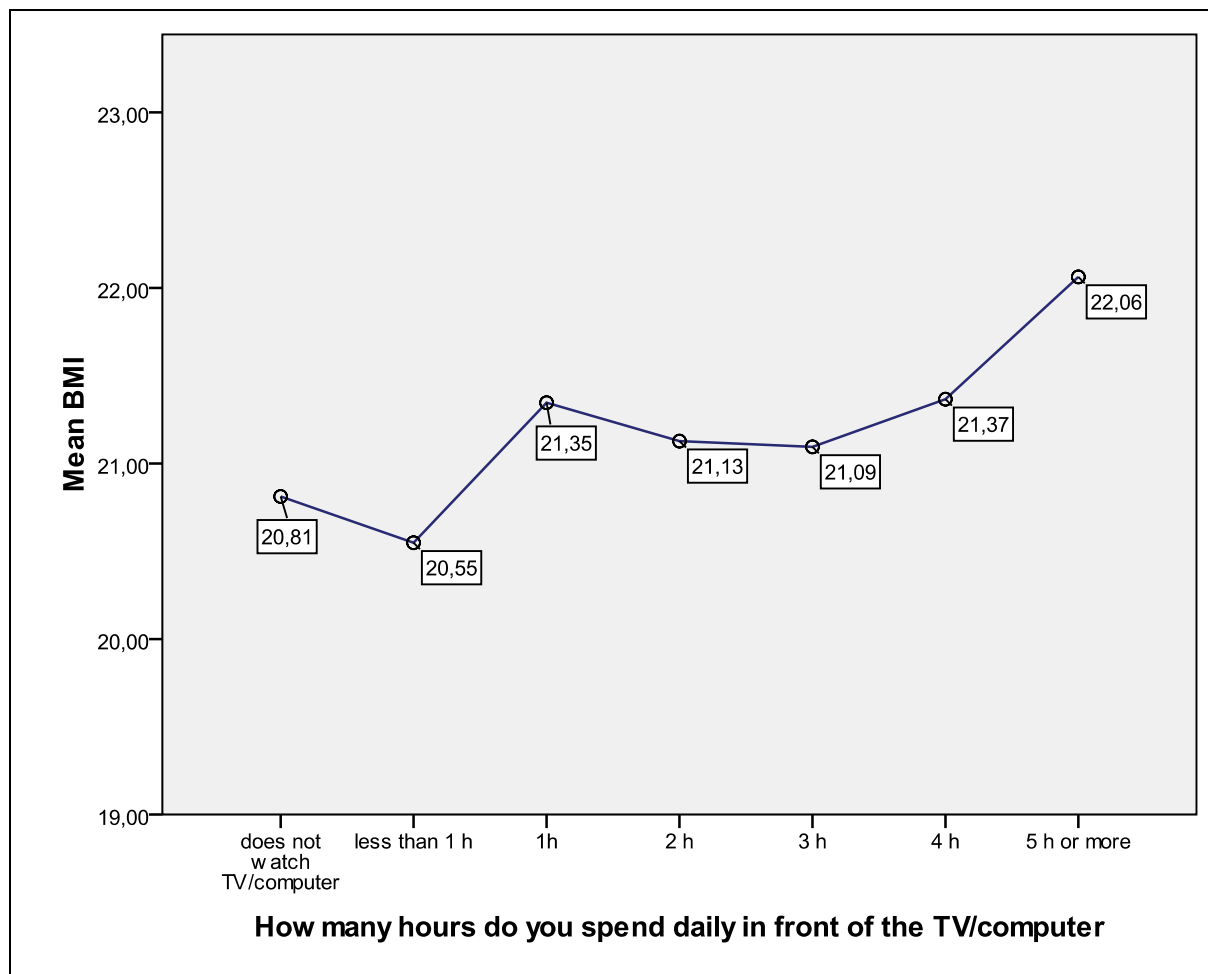
Figure 2. The distribution of BMI regarding the time spent watching TV/computer

The Kruskal-Wallis test was applied, in order to see if the BMI was affected by the hours spent in front of TV/computer. BMI was significantly affected by the time spent in front of TV/computer H(6)=2,55 p<0,001. Then, the Mann-Whitney tests were used to follow up this finding. A Bonferroni correction was applied, so all effects are reported at 0,0167 level of significance. It appeared that the BMI was not different significant when students had watched TV for 2 hours (U=21721, r= - 0,02) when compared with students which are not spending time in front of TV/computer. However, when the students had watched 5 hours or more, their BMI had been significantly higher than the BMI of the students which are not spending time in front of TV/computer (U=30569, r= - 0, 20) or of the students which are spending 4

hours in front of TV/computer (U=30569, r= - 0, 09).

CONCLUSIONS

The girls tend to have a more sedentary behavior than the boys, spending more time in front of the TV/computer. The knowledge of the effect of the sedentary behavior led to less time spent in front of the TV/computer. BMI was significantly affected by the time spent in front of TV/computer.

Physical inactivity, sedentary lifestyles, overindulgence, and genetic predisposition are some of the factors responsible for obesity. It is a global task to educate people about the importance and significance of caloric restriction, healthy lifestyles, and proper nutrition in conjunction with

increased physical activity and routine exercise to combat obesity.

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SEXUAL BEHAVIOR IN SECONDARY SCHOOLS VOCATIONAL STUDENTS FROM MOLDOVA

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REZUMAT

In studiul prezent ne-am propus investigarea comportamentului sexual la elevii şcolilor secundare profesionale din Republica Moldova. Studiul a fost efectuat pe un eşantion format din 771 elevi (345 fete şi 426 băieţi) ai şcolilor profesionale secundare din Republica Moldova prin aplicarea unei anchete epidemiologice transversale cu aplicarea unui chestionar specific pentru evaluarea comportamentului sexual la tineri. Din numărul total al elevilor supuşi chestionării, 27,8% elevi (fete – 25,5%; băieţi – 63,8%) au declarat că au trecut prin experienţa relaţiilor sexuale. Numărul elevilor din anul III, care au avut relaţii sexuale, este de două ori mai mare decât al celor din anul I. Vârsta primei relaţii sexuale, declarată de către majoritatea celor investigaţi, este de 14 – 17 ani pentru băieţi şi de 15-18 ani pentru fete, însă în rândul băieţilor sunt şi relaţii sexuale mai precoce. Numărul de parteneri sexuali, declaraţi de către 3/4 din fete şi 1/3 din băieţi, ce au avut relaţii sexuale, este de 1-2 persoane, însă fiecare al 3-lea băiat a declarat 6 şi mai mulţi parteneri sexuali. Prezervativul este cel mai frecvent contraceptiv utilizat pe parcursul vieţii sexuale de către 62,5% fete şi 71,9% băieţi. 14,4% fete declară că au fost forţate să aibă relaţii sexuale. 4,0% băieţi recunosc că au forţat pe cineva să aibă relaţii sexuale.

Cuvinte cheie: *elevii şcolilor profesionale, comportament sexual la tineri, relaţii sexuale precoce*

ABSTRACT

In this study we aimed to investigate sexual behavior in vocational school students from Moldova. The study was conducted on a sample of 771 students (345 girls and 426 boys) from vocational schools in Moldova, with a cross-sectional design, with a specific questionnaire for assessing sexual behavior in young adults. From the total number of students undergoing questioning, 27.8% students (girls – 25.5%, boys – 63.8%) responded that they are sexually active. The number of students from the 3rd year of vocational school, which have had sexual relations, is two times higher than the number of the students from the 1st year which are sexually active. The age of first sexual intercourse ranges between 14 and 17 years for boys and 15 and 18 years for girls. Sometimes the first intercourse happens even

earlier for boys. The mean number of sexual partners, of the great majority of the girls and for some of the boys is 1 or 2 people, but most of the boys are declaring more than 6 partners. The condom is the most common contraceptive used during sexual intercourse by 62.5% girls and by 71.9% boys. 14.4% girls reported having been forced to have sex. 4.0% boys admitted to have forced someone to have intercourse.

Keywords: vocational school students, youth sexual behavior, early sexual intercourse

INTRODUCTION

The results of several studies showed high prevalence of risk behavior in teenagers [1].

Sexual knowledge and healthy sexual behavior, avoiding early sexual intercourse and the sexual abstinence until marriage are the ground stone of every family and a guarantee of avoiding AIDS and other sexually transmitted diseases and unwanted pregnancy among the adolescents and young adults.

As early sexual relations becomes widespread among students and there is an increasing number of adolescents diagnosed with AIDS and other sexually transmitted diseases the necessity of studying the sexual behavior in vocation schools for the elaboration of preventive measures regarding healthy education and healthy life style promotion.

The schools purpose is to inform the students regarding hygiene and the methods for the prevention and the control of diseases. This can be done by standard health promotion and health education and the main outcome is the development by the young population of healthy behavior [2, 3, 4].

Without the proper sexual education the young people have irresponsible attitudes towards themselves and towards their partners. [5].

The study revealed early and frequent sexual relations, with many sexual partners, often without the use of contraceptives [6].

Scientists from Romania presented data from large study on sexual behavior in young people from Timis County. Of the 2877 subjects who responded to questions regarding the onset of sexual life, 43.8% (1203) claimed to have started sex life. For both sexes, 54.2% (730) of boys and 33.8% (473) girls have sexual intercourse. Both sexes are confronted with increasing percentages recorded in sexual relations in the age group 11 to 17 years or more [7].

MATERIAL AND METHODS

The study, which had a cross-sectional design, used a questionnaire for the evaluation of sexual behavior (age of onset of sexual life, number of sexual partners, knowledge of pregnancy prevention methods,). The questionnaire was applied anonymous to 771 students (345 girls, 426 boys) from vocational schools from Moldova (14 institutions) with 3 years training period, of which: 2 in Chisinau and 12 in rural areas.

RESULTS AND DISCUSSION

A percentage of 25.5% girls and 63.8% boys had sexual relations. The number of pupils that have had sexual intercourse is increasing with age and the year of studies. The pupils sexually active are 18.1% among girls in the first year, 17.8% in the second year and 41.4% in the third year and that among boys – 41.4%, 70.3% and 82.4%. The number of boys exceeds 2 to 3 times the number of girls sexually active per year of study.

During the last 3 months that preceded the questionnaires 16,6% of girls and 44,4% of boys have had sexual intercourse.
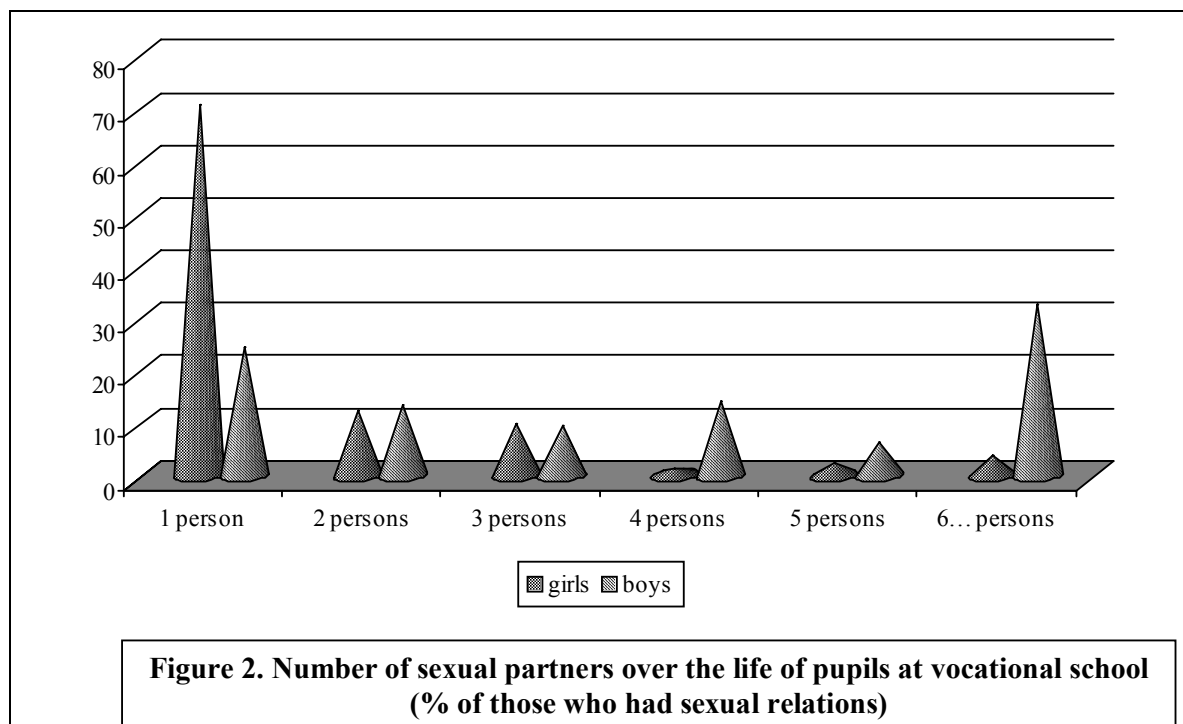
The analysis of student responses regarding the age of first intercourse showed that boys begin earlier than the girls their sexual life. Age of onset of sexual life is 15-18 years for 88.0% of girls and 14-17 years for 76.7% for boys. It is necessary to underline that 20.7% boys began their sexual life before the age of 14.

Figure 1. Age of onset of sexual life of pupils at professional secondary school (% of those surveved)
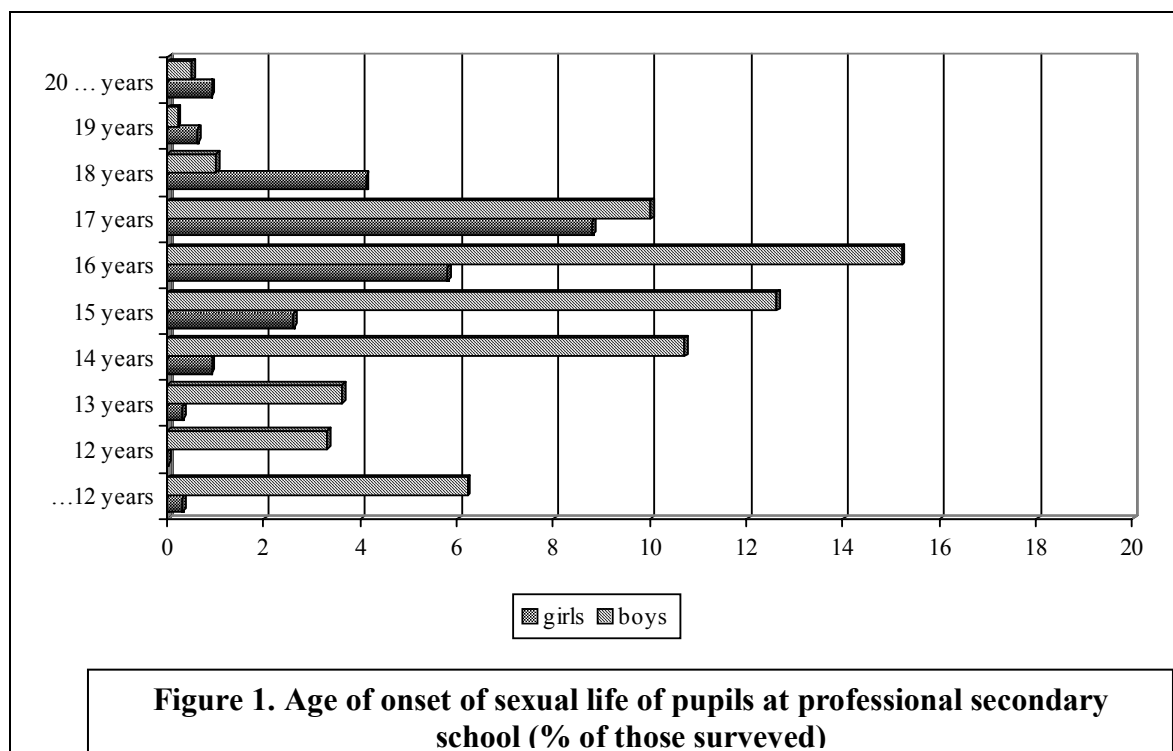
The consumption of alcohol and drugs foregoing sex encounters among students investigated. A percentage of 5.6% girls and 14.9% boys report they drank alcohol or used drugs before last sexual intercourse.

The number of sexual partners for 82.9% girls is up to 2. For boys, the number of sexual partners ranges from 1 to 6 or more.

Figure 2. Number of sexual partners over the life of pupils at vocational school (% of those who had sexual relations)

The students which had no sexual relations up to the moment of the questionnaire motivated their sexual abstinence by the fact they wish to wait until they are mature or until the marriage (girls 52.8 % of the answers, boys 47.8 % of the answers), by not risking a pregnancy or a disease (girls 19.0 % of the answers, boys 21.5 % of the answers), by not being emotionally prepared (girls 13.8 % of the answers, boys 8.6 % of the answers) or by the fact they have not encountered anyone they wish to have sexual relations with (girls 10.0 % of the answers, boys 12.4 % of the answers). In conclusion, both girls and boys report the same 4 reasons that stopped them from sexual relations.

A percent of 14.4 % of the girls (of the total number of girls in the study) declare they were forced to have sexual relations, their number being higher in the first year (15.4%) and in the second year (17.5%) in comparison with the third year (10.0%). In the same time, 1.5% of the girls declare they have forced someone to have sexual relations with them. 4.0% of the boys admit to have forced someone to have sexual relations and 5.5% report to have been forced to have sexual relations.

The contraceptive method most commonly used by the partners during their last intercourse to prevent pregnancy is the condom (57.0% of the girls and 72.1% of the boys reported this method). The use of other contraceptive methods is much smaller (table 1). A considerable number of vocational schools students (22.8% girls and 19.0% boys) have used no contraceptive method during their last sexual relation.

Table 1. The most frequently used contraceptive method by the partners to prevent pregnancy (% for those who had sexual relations)

Contraceptive methods	Year I				Year II				Year III				Total			
	Girls		Boys		Girls		Boys		Girls		Boys		Girls		Boys	
	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%
No contraceptive method	4	20,0	13	22,4	7	35,0	15	17,6	7	17,9	19	18,3	18	22,8	47	19,0
Contraceptive pills			2	3,4	1	5,0	1	1,2	1	2,6	5	4,8	2	2,5	8	3,2
Condom	14	70,0	42	72,4	9	45,0	65	76,5	22	56,4	71	68,3	45	57,0	178	72,1
Coitus interruptus (Withdrawal Method)	2	10,0	1	1,8	3	15,0	3	3,5	7	18,0	8	7,7	12	15,2	12	4,9
Other methods							1	1,2	2	5,1	1	0,9	2	2,5	2	0,8
Total	20	100	58	100	20	100	85	100	39	100	104	100	79	100	247	100

The condom, the most frequently used contraceptive during the sexual life, was reported by 62.5% of the girls and 71.9% of the boys. On the second place as frequency are those who use no contraceptive method during the intercourse 15.9% of the girls and 17.9% of the boys. 2.0% of the total number of girls in the study reported they were pregnant once or more times; 3.2% of the boys reported their sexual relations resulted in their partners becoming pregnant 1-2 or more times.

CONCLUSIONS

1. The sexual relations are common among students from vocational schools in the Republic of Moldavia, especially among boys.
2. The sexual life begins at an early age, especially for boys.
3. The number of girls reporting they were forced to have sex is high.
4. A small number of sexual partners is reported for girls and a higher number is reported for boys.
5. Most students motivate their sexual abstinence by the wish to wait until they grow up or until marriage.

6. The most frequently used contraceptive method, both in the last sexual intercourse and during their lifetime, is the condom.
7. A large number of students use no contraceptive method during their sexual relations.

RECOMMENDATIONS

- In the Republic of Moldavia it is necessary to elaborate a program for promoting health among students (children and adolescents) of all ages.
- It is called for the inclusion in the School Education Program for the vocational schools of a discipline for teaching education for health, supplying teaching material as well (curriculum, manuals, and guides).
- It is necessary to train teachers from pre-school and pre-university institutions and future professors in the education for health of the students, including their sexual education.
- The intervention of the media in the education for health of the young people and in promoting a healthy life style is extremely necessary.

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TIMIS COUNTY ADOLESCENTS AND DIET DISTRIBUTION

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ABSTRACT

În adolescenţă, o perioadă de nonconformism, independenţă în creştere, tinerii nu au tendinţa de a urma orice reguli. Nevoile lor de zi cu zi pentru a fi împărţite în cel puţin trei mese principale şi două gustări, cu adaptarea la şcoală. Studiul a fost efectuat pe o populaţie reprezentantivă a adolescenţilor din licee, şcoli postuniversitare şi de ucenici din judetul Timis, mediul urban şi include un total de 2908 de elevi cu vârste cuprinse între 14-25 de ani. Metoda de lucru a fost de studiu transversal în populaţie, şi utilizarea chestionarului CORT 2004 chestionarul pentru investigarea unor comportamente de risc de sănătate la tineri. Un total de trei mese pe zi servesc mai mult de 26,2% din adolescenţi, cei mai mulţi dintre tineri servesc doar două mese pe zi, 47,1%, băieţi şi fete au fost similare procentuale, şi de 26,8% au o masa pe zi, băietii au fost de două ori mai frecvenţi. Consumul zilnic al micul dejun scade cu vârsta, de la 64% la 15 ani, la 50,7% la 19 de ani.

__Cuvinte cheie:__ adolescenţă, nutritie, diete de distribuţie

ABSTRACT

In adolescence, a period of nonconformism, release, increase independence, young people tend not to follow any rules. A particularly important aspect of adolescent nutrition is that food intake should be divided into at least three main meals and two snacks, with adaptation to school. The study was performed on a representative population of adolescents in high schools, postgraduate and apprentice schools in Timis county, urban areas, and it included a total of 2908 pupils aged between 14-25 years. The work method was the transversal populational study using the CORT 2004 questionnaire for investigating some health risk behaviors in young subjects. More than 26.2% of adolescents serve three meals a day, most of young people serve only two meals a day, 47.1%, boys and girls had similar percentages, and 26.8% serve a meal per day, boys were twice as frequent. Daily consumption of breakfast frequency decreases with age, from 64% in 15 years, to 50.7% in 19 years.

__Keywords__: adolescence, nutrition, diet distribution

INTRODUCTION

Eating habits and physical activity related to an individual rooted in childhood, the family habits are recorded accurately. They stabilized during adolescence. In adolescence, a period of non-conformism, release, increase independence, young people tend not to follow any rules. They are particularly vulnerable to the temptations that are everywhere, easily fall prey to unhealthy food abuse of "fast food" and the emotional turmoil of this period can affect their eating habits.

We cannot say about a food that is good or bad, each bringing food and contributing to a balanced diet when it is moderate consumption. Pleasure and social and cultural aspects of meals are as important to quality of life, like mere nutritional aspect. Food young people should be enough heat and as varied in terms of nutritional factors [1,2].

A particularly important aspect of adolescent nutrition is that food intake should be divided into at least three main meals ensuring better functioning of the body [3,4]. Their daily needs to be divided into at least three main meals and two snacks, with adaptation to school [5,6]. Breakfast and dinner each containing 20-25% of the total needed, 40-50% lunch and snacks 5-10% [7].

At this age, young people give more than meals eaten in a hurry, skip meals, joining some meals like breakfast with lunch or dinner with lunch [8]. Having a great independence, eat outside the home, they buy and prepare their own food some [9].

METHODOLOGY

The study was performed on a representative population of adolescents in high schools, postgraduate and apprentice schools in Timis county, urban areas, and it included a total of 2908 pupils aged between 14-25 years (99% for the 15-19 years age group), 51.5% girls and 48.5% boys.

The work method was the transversal populational study, by group and anonymous use of the CORT 2004 questionnaire for investigating some health risk behaviors in young subjects, as conceived by a CNCSIS accredited research, based upon the adaptation of some international questionnaires (ESPAD, YRBSS) to Romanian realities, during the period 2003 - 2005 [10].

RESULTS AND DISCUSSIONS

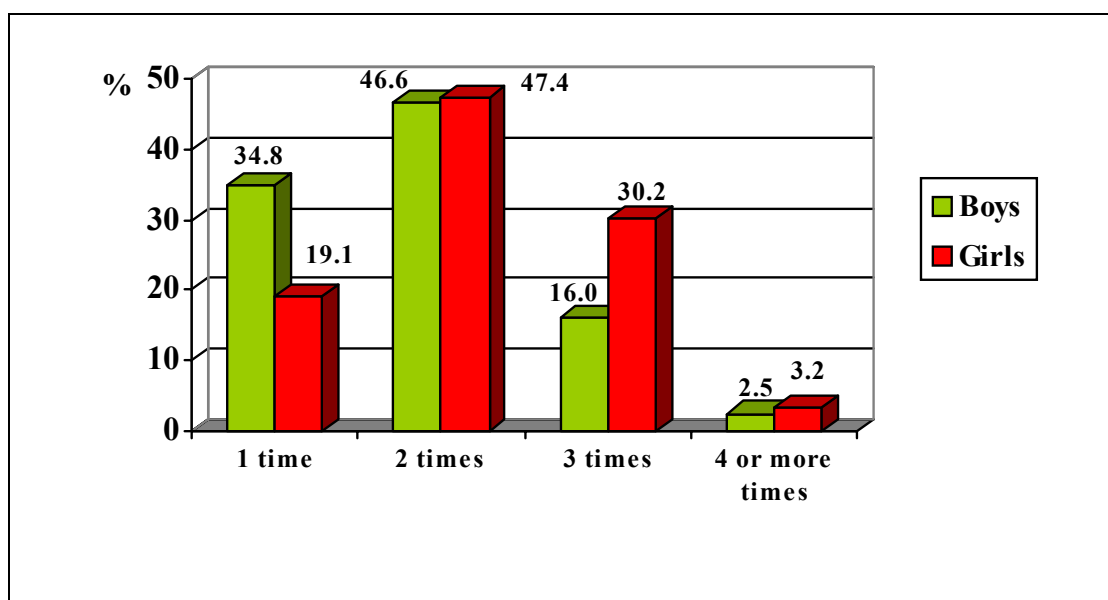### 1. Number of meals per day (Table 1, Figure 1,2)

Among teens surveyed, the majority, 73.3% (2103), have used at least two meals a day. Of these, 47.1% (1351) have used two meals a day, 23.3% (669) took three meals a day and 2.9% (83) have used four or more meals a day. A significant proportion of young people, 26.8% (768), fasting only once a day (Table 1).

Table 1. Distribution adolescents in the number of meals per day

Answers	Frequency	Percentage	95% C.I.	
			Minimum	Maximum
1 time	768	26.8	25.1	28.4
2 times	1351	47.1	45.2	48.9
3 times	669	23.3	21.8	24.9
4 or more times	83	2.9	2.3	3.6
Total respondents	2871	100.0		

As the number of meals consumed per day, differences between the values of percentage distribution of boys and girls are statistically significant, χ2 of 131.00 with a probability threshold p<0.001. The differences are in favor of girls who have consumed more frequently than boys. Thus, most women, 77.6% (1148), compared with 62.6% (868) of boys had consumed two to three meals a day, and the percentage of boys, 81.4% (1129), who took 1-2 meals per day is higher than girls, 66.5% (984) (Figure 1).

Figure 1. Percentage distribution of boys and girls in the number of meals per day

Regarding the number of meals consumed per day, in terms of age, it is noted that there are significant differences statistically, with χ^2 of 21.2 and a probability threshold p<0.01 (Figure 2).
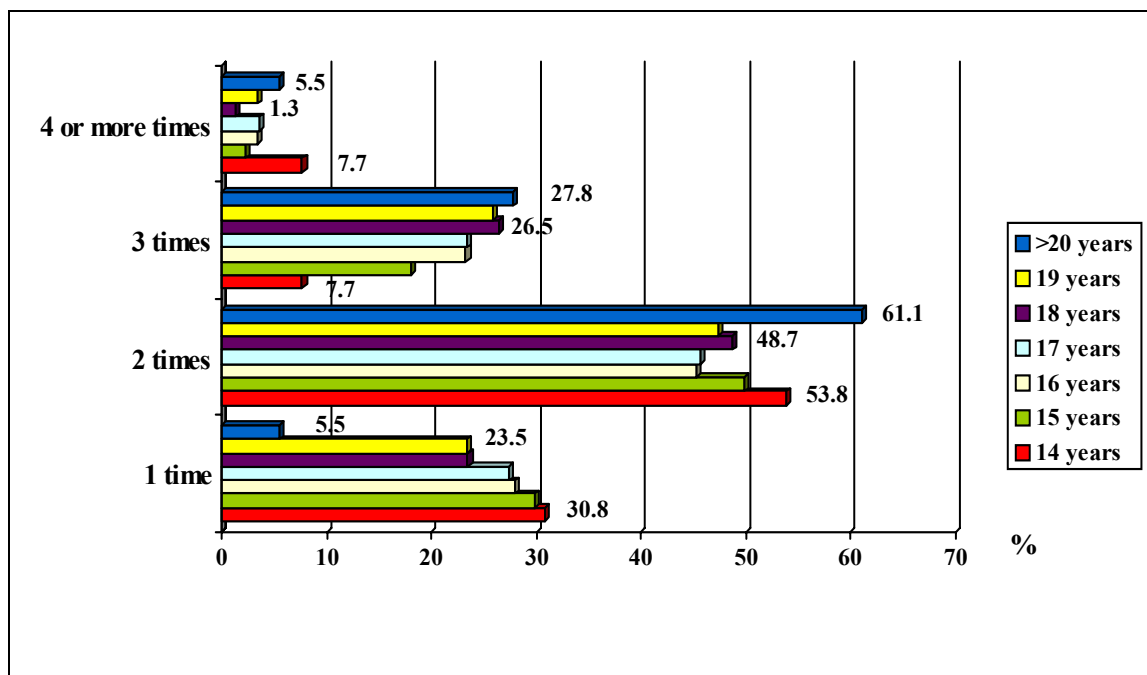
Figure 2. Percentage distribution of adolescents by age groups for the number of meals per day

Most were young people of 14 years, 84.6% (11), who reported consumption of 1-2 meals a day, they were at this age under the influence of parents and adolescents share this usually decreases with increasing age at 66.6% (12) of young people 20 years or more. Among adolescents who ate three meals a day, most were 20 years or more, the rate of 27.8% (5) and 7.7% (1) of the young people of 14 years reported consuming four or more meals a day.

2. Breakfast (Table 2, Figure 3, 4)

About half, 44.0% (1264), of young people interviewed were rarely or never consumed breakfast, usually unhealthy, given the energy needs of adolescents in the morning when they work most intense. Only one third, 33.4% (959), of them have always eaten breakfast (Table 2).

Table 2. Distribution of adolescents according to breakfast consumption

Answers	Frequency	Percentage	95% C.I.	
			Minimum	Maximum
Always	959	33.4	31.6	35.1
Often	652	22.7	21.2	24.3
Rarely	977	34.0	32.3	35.8
Never	287	10.0	8.9	11.2
Total respondents	2875	100.0		

In terms of frequency of breakfast consumption by sex, we see that there are significant differences statistically, with χ2 of 58.0 and a probability threshold p<0.001. The differences are in favor of boys, 39.2% (543), which recorded a daily consumption of breakfast in a higher percentage of girls, 27.9% (414), and they rarely or never consumed breakfast in percentage of 49.3% (731) to 38.1% (529) of boys (Figure 3).
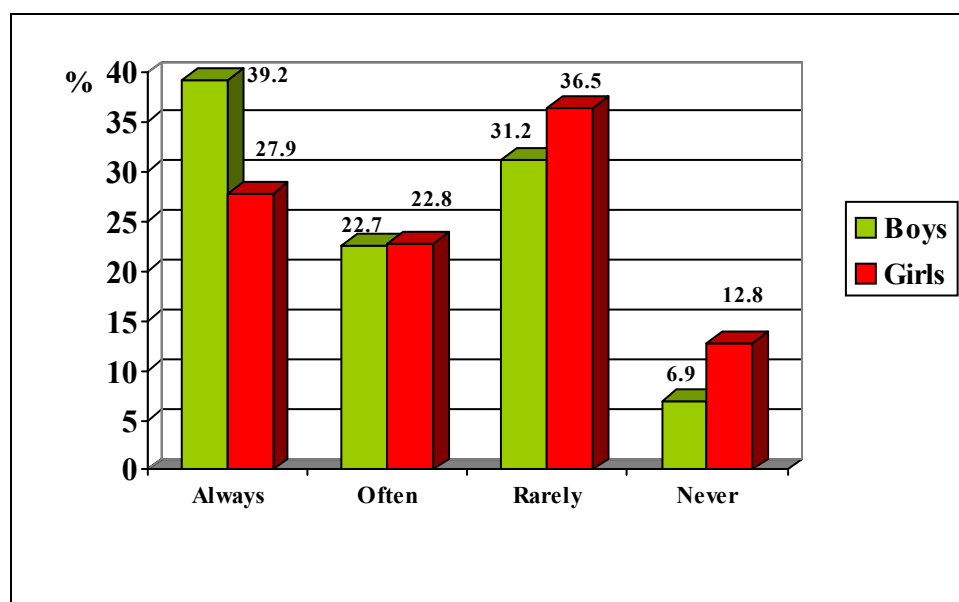
Figure 3. Percentage distribution of boys and girls according to the consumption of breakfast

In the light of age differences between frequency of breakfast consumption are statistically significant, with χ^2 of 22.9 and a probability threshold $p<0.01$ (Figure 4).
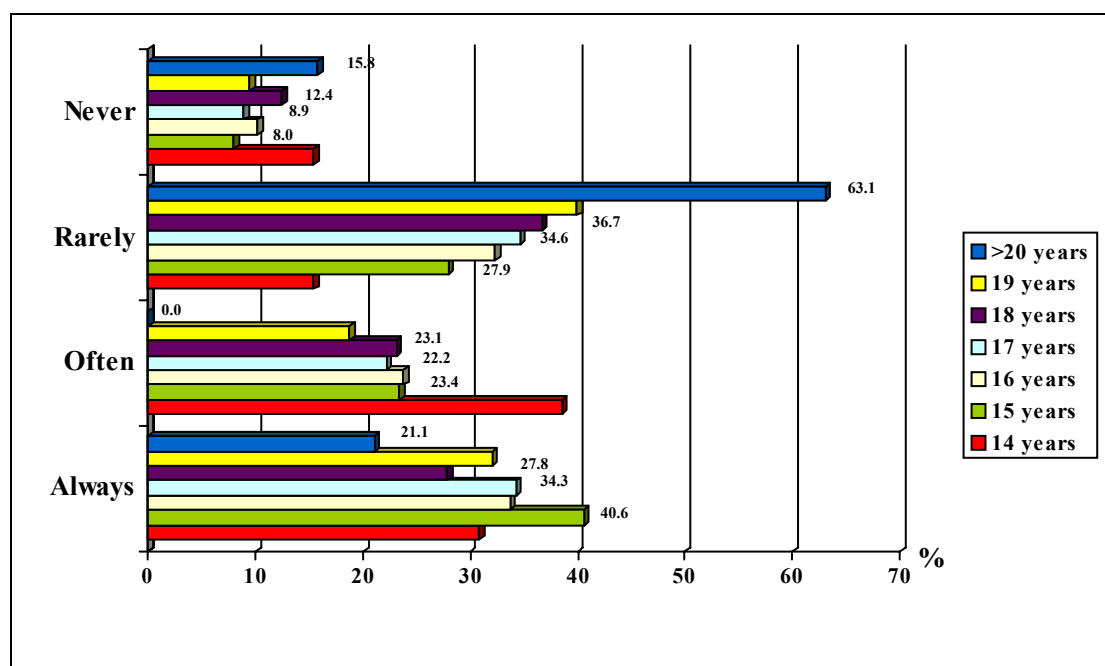

Figure 4. Percentage distribution of adolescents by age group according to the consumption of breakfast

Highest frequency of consumption recorded at young people was 14 years, 69.3% (9), and 15 years, 64.0% (257), age at which adolescents are driven by parents, and the share of young people who often take or never breakfast is increasing in young people of 14 years, to 30.8% (4) of them, in the 20 years or more, respectively, 78.9% (15) of them.

CONCLUSIONS

In adolescence, intake of food is ensured by three main meals and two snacks, tailored to their school and non-scholastic activity. A total of three meals a day serve more than 26.2% of adolescents, 1/3 of boys and 1/5 of the girls. Most young people serve only two meals a day, 47.1%, boys and girls were similar percentage, and 26.8% serve a meal per day, boys were twice as frequent. In age groups observed for the sample overall situation.

A third of adolescents, 33.4%, always eat breakfast, with a ratio boys/girls of 1.3/1. 34% of adolescents eat breakfast and 10% rarely ever. Daily consumption of breakfast frequency decreases with age, from 64% in 15 years, to 50.7% in 19 years.

Given the short time table, skipping some meals are risks to the health of adolescents. Nonconsumption breakfast is associated with a capacity of concentration and poor school performance and longer term, with obesity.

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ALOE VERA - NATURE'S SILENT HEALER

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Forever Living Products

ABSTRACT

Aloe Vera este una dintre cele mai vechi cunoscute plante medicinale. Medicii greci din antichitate au folosit-o în prescripţiile lor şi egiptenii antici a folosit-o pentru îngrijirea de frumuseţe şi sănătate. Aloe Vera (Barbadensis Miller) este o planta suculentă, din categoria plantelor cultivate în climatele calde ale lumii. Aceasta este, de fapt, un membru al familiei Aloacea. Cunoaşterea puterii vindecătoare extraordinare ale plantei proaspete Aloe Vera a fost transmisă de-a lungul secolelor, dar oamenii de ştiinţă au fost în măsură să explice eficacitatea în 1968, atunci când un farmacist american a descoperit o metodă de a extrage şi stabiliza natural gelul din interiorul frunzelor cu păstrarea calităţilor sale naturale de vindecare. Acum, milioane de oameni din întreaga lume se bucură de beneficiile acestei plante remarcabile.

Cuvinte cheie: *Aloe vera, frumusete, sănătate*

ABSTRACT

Aloe Vera is one of the oldest known medicinal plants. The early Greek doctors used it in their prescriptions and the ancient Egyptians used it for beauty care and health. Aloe Vera (Barbadensis Miller) is a cactus-like plant growing in the warmer climates of the world. It is, in fact a member of the aloacea family of plants. Knowledge of the extraordinary healing powers of the fresh Aloe Vera plant has been transferred down the centuries, but scientists had been unable to explain or duplicate the plant's effectiveness until 1968, when an American pharmacist discovered a method to extract and naturally stabilize the inner gel from the leaves while still preserving its natural healing potency. Now millions of people around the world enjoy the benefits of this remarkable plant.

Keywords*: Aloe vera, beauty, health*

Aloe Vera has often been referred to as the Miracle Plant, the Healing Plant, Wand of Heaven, Plant of Life or the Burn Plant. Aloe Vera has been used in Indian Ayurvedic Medicine for centuries and is known as Kumari or Ghikanwar. There are over 300 types of Aloe Vera of which only 3 or 4 are considered to have medicinal qualities. All originated in Africa, of which Aloe Barbadensis Miller is the most potent [1].

Although Aloe Vera Barbadensis looks like a cactus, it is fact a member of the Lily family and is often called the Lily of the Desert. It grows only in warm and dry climates. It takes approximately 4-5 years for Aloe Vera Barbadensis to reach

maturity; the leaves are 2 feet in length and 3-4 inches wide at the base and have a natural lifespan of about 12 years [2]. The flower stem develops from the centre, reaching 3 feet in height. The likes of Mahatma Gandhi, Cleopatra and Alexander the Great used Aloe Vera.

Aloe Vera Barbadensis has adaptogenic properties, which means that the body will take from it what it requires and so the benefits vary from person to person. It also provides a rich cocktail of nutritional elements.

Properties of Aloe Vera Barbadensis Miller Constituents

There is a wide range of research from all over the world based upon different species of Aloe. As far as is possible the table below describes the constituents found in Aloe Vera Barbadensis Miller with their properties and their inferred activities [3]. The aloe constituents are derived from the aloe leaf which consists of three primary sections: the rind (photosynthesis) with sap contained in the pericyclic transport tubules (xylem and phloem), the mucilage (container) layer and the parenchyma or gel fillet (storage) layer. The relative quantities of the aloe constituents may be quite small (the total solid fraction varies from 0.5 to 1.5%), but most researchers claim that the effects that are observed may be due to the synergistic actions of the 75 known ingredients [4]. The table (Table 1) below lists the constituents in alphabetical order. The aloe constituent list represents a consensus view of published work and may not be complete [5]. The properties and the associated activities reported in the table have been constructed using the references cited below...

Table 1. The aloe constituent list and the properties and the associated activities

Constituents	Number & Identification	Properties & Activity	Comment
Amino Acids	Provides 20 of the 22 human required amino acids & 7 of the 8 essential ones	Provides the basic building blocks of proteins in the production of muscle tissue etc	The 8 essential amino acids are those the human body cannot manufacture
Anthraquinones	Provides 12 anthraquinones: Aloe emodin, Aloetic Acid, Aloin, Anthracine, Antranol, Barbaloin, Chrysophanic Acid, Emodin, Ethereal Oil, Ester of Cinnamonic Acid, Isobarbaloin, Resistannol.	In relatively small concentrations together with the Gel fraction they provide Analgesic, Anti-bacterial, Anti-fungal & Anti-viral activity. In high concentration on their own they can be toxic.	Traditionally known as laxatives.The antraquinones are found in the sap. The anthraquinone derivatives (anthrones & chromones) comprise the phenolic fraction of the sap. The primary sap component is Aloin/Barbaloin anthrone derivative
Enzymes	Provides 8 enzymes: Aliiase, Alkaline Phosphatase, Amylase, Carboxypeptidase,	Helps breakdown of food sugars and fats aiding digestion & enhancing nutrient	

	Catalase, Cellulase, Lipase, Peroxidase	absorbtion	
Hormones	Auxins & Gibberellins	Wound Healing & Anti-inflammatory	
Lignin	Cellulose based substance	Thought to provide penetrating power in Aloe vera skin preparations and may act as a carrier for other components	
Minerals	Provides 9 minerals: Calcium, Chromium, Copper, Iron, Magnesium, Manganese, Potassium, Sodium, Zinc	Essential for good health and is known to work in certain combimation with each other, vitamins and other trace elements	
Salicylic Acid	Aspirin like compound	Analgesic	
Saponins	Glycosides	Soapy substance both cleansing and antiseptic	
Sterols	Provides 4 main plant steroids: Cholesterol, Campesterol, Lupeol, ß Sitosterol	Anti-inflammatory agents. Lupeol also possesses antiseptic and analgesic properties	
Sugars	Monosaccharides: glucose & fructose Polysaccarides: gluco-mannans / polymannose	Anti-inflammatory action Anti-viral, immune modulating activity of Acemannan	The long chain gluco-mannons are absorbed intact by the pinocytotic process of certain cells lining the digestive tract.
Vitamins	A, C, E, B, Choline, B12, Folic Acid	Antioxidant(A,C,E): neutralises free radicals	B's & Choline involved in amino acid metabolism, B12 required for production of red blood cells, Folic Acid in the development of blood cells

Why Does Aloe Vera work?

Aloe Vera works by providing a rich cocktail of nutritional elements whose combined action and balance, produce a more powerful effect together, than would be expected from the individual components.

This is because they work as team, enhancing each other's properties, which means it is a substance which increases non-

specific resistance of the body to adverse influences such as infection or stress [6].

Where does it work?

Aloe Vera because of its nutritional qualities and anti-oxidant properties helps firstly to prevent injury to epithelial tissues and it promotes healing, when they are damaged. The largest epithelium is the skin but this also includes the lining of the gut and the bronchial tubes [7]. Aloe Vera therefore works just as well on damaged skin as it does, on the inflamed bowel or in cases of Asthma.

The Anti-oxidants fight the destructive 'free radicals' (unstable compounds produced by our metabolism and found in environmental pollutants), which are thought to cause various ailments including some cancers as well as contributing to the aging process.

How does it work?

Aloe Vera's natural anti-inflammatory and anti-microbial actions combined with its nutritional constituents promote cell growth and therefore healing.

How does Aloe Vera Work in the Body?

Aloe works in several steps inside the body. First it goes into the mouth and down the throat soothing and assisting repairs to the body with its rich cocktail of nutrients. This is why many say it helps with such problems as bleeding gums, mouth ulcers and sore throats.

Second it goes into the stomach and intestine. Both these organs are lined with tiny finger like mechanisms which themselves have microscopic fingers attached. These massage and digest food but over time the space between the fingers can get blocked up with pollutants, toxins, chemicals and additives in food (is it any

wonder that 1 in 3 of us suffer from Irritable Bowel Syndrome?) [8].

Aloe's natural cleansers help break down this 'artificial sludge' that water alone cannot move and boosts the bodies repair of the walls and linings. The result is that many people claim Aloe helps with Irritable Bowel Syndrome, Other Bowel Disorders, ME, stress, colitis and diverticulitis.

Finally, the aloe moves into the body where it works to boost the body's own repair system, feeding each and every single cell with as many of the nutrients as it can. It is this action that lead to claims of a 'curative' effect on arthritis, Candida and nerves

How does Aloe Vera Work on the Skin?
Aloe is highly prized because it penetrates deep into the skin, right down to the level where skin cells are manufactured. Unfortunately you need a lot of Aloe to make sure that what penetrates the skins surface does any good. To be sure make sure any Aloe Cream you are thinking of buying, or have bought, has Aloe as its number one ingredient [9].

Because Aloe is a natural substance, not a drug, it works with the body at Cell level, feeding and repairing. It works from the bottom up so it can sometimes take days or even weeks to see a result but when you do you can be confident it is the whole skin that is in good shape, not just the surface. It is these actions that lead people to claim success with wound healing, eczema, psoriasis, burns, acne and stings.

There are cheaper methods to make your skin look better in a matter of days. They mainly rely on putting certain oils in the cream which block up the skins pores. Unable to sweat properly water builds up inside the skin and makes wrinkles look as if they disappear. The real damage is in later life.

How Aloe products are manufactured is extremely important!

The gel of the Aloe plant, when exposed to oxygen for a prolonged time (about four hours) oxidizes - rendering it worthless. (This is the same reaction to air as an apple undergoes when the "insides" are exposed to air - it quickly browns due to oxidation) [10].

Thus, you want the manufacturer's reliable assurance, in writing, that not only is the species correct - but also from harvest, to filleting (removing the outer leaf to retain only the clear gel), to manufacturing the process is four hours or less. If you can't have this assurance, look elsewhere.

Aloe must be "stabilized". This is a process (involving neither heat nor chemicals that would destroy the Aloe's original compounds) that assures the Aloe (such as the final juice or gelly, or lotion product) is essentially the same as if you freshly filleted the leaf yourself.

If it is not properly stabilized (in four hours or less from the time the leaf is harvested), it may also be of no nutritional value. The reason is because Aloe Vera oxidizes within four hours (much as an apple or potato turns brown when exposed to the air for a period of time) from the time the gel is exposed to the air. Once so oxidized, the gel loses its nutritional value.

Again - Aloe barbadensis miller, of the 200+ species of Aloe Vera, is the most potent and nutritious - with only mature plants bearing the greatest benefits. If your Aloe Vera product isn't produced from the Aloe barbadensis miller plant you are not getting the best quality product [11]. If it is not properly stabilized (in four hours or less from the time the leaf is harvested), it may also be of no nutritional value.

Benefits:
• Treatment of acne, pimples & psoriasis

• Analgesic properties for inflammation of skin
• Helps reduce high blood pressure
• Anti-aging properties
• Heals insect bites minor burns & sunburns
• Arthritis, diabetes
• Helps prevent cancer & tumors
• Eases Constipation
• Antifungal, antiviral, antiparasitic & antibiotic properties.

Aloe Vera properties and benefits:
• Boosts The Immune System - contains unique polysaccharides including "acemannan"
• Contains Antiseptic Agents
• Relieves Itching
• Bacteriacidal - fungicidal, viricidal
• Moisturises
• Increases Blood Flow To The Skin
• Naturally Cleanses - detoxifies body systems
• Adaptogen - corrects imbalances; broad spectrum uses eg. constipation & diarrhoea
• Penetrates Tissue - penetrates many layers of skin & deep into the dermis
• Naturally anti-ageing - when used topically
• Naturally Anti-Inflammatory - contains plant steroids
• Nutritional - contains vitamins, minerals, enzymes & amino acids
• Accelerates Healing - stimulates cell regeneration
• Pain Killer - contains natural analgesics
• Extremely Safe - no known side-effects
• Breaks Down Dead Tissue - contains proteolytic enzymes
• Rich source of Micro-Nutrients - contains over 200 active constituents

TOP 10 HEALTH BENEFITS OF ALOE VERA JUICE

10. Dental Health and Hygiene Aloe Benefits

Aloe Vera juice is extremely healthful for your mouth and gums.

9. Aloe Vera Provides Rapid Soothing
Aloe Vera is legendary for its soothing property benefits.

8. Aloe Vera Juice Benefits Digestion
A healthy digestive tract ensures that nutrients from the foods we eat are absorbed into the blood stream. Aloe Vera juice has natural, detoxifying benefits.

7. Aloe Vera Juice Provides Immune Support and Function
Aloe Vera Juice benefits natural support for the immune system. Since the immune system works around the clock protecting the body, aloe Vera, with its natural immune enhancers, gives the body the benefit of a continual arsenal from which to draw. Drinking 2 to 4 ounces of Aloe Vera Juice regularly may give your immune system the helping hand it needs.

6. Benefits of Aloe Vera Juice to Weight and Energy Levels
Aloe Vera juice naturally, and with regular use, allows the body to cleanse the digestive system. Our diets include many unwanted substances which can cause lethargy and exhaustion. Taken regularly, Aloe Vera juice ensures a greater feeling of well-being, allowing energy levels to increase and helping to maintain a healthy body weight.

5. Aloe Vera Juice Benefits Collagen and Elastin Repair
Aloe Vera juice can add a rich supply of building materials to produce and maintain healthy skin. The skin replenishes itself every 21 to 28 days. Using the aloe Vera juices and skin care products with aloe Vera, it enhances this ability. A wonderful benefit for the skin!

4. Aloe Vera Juice's Daily Dose of Minerals
Some of the minerals found in aloe Vera juice include calcium, sodium, iron, potassium, chromium, magnesium, manganese, copper, and zinc. What a powerful storehouse of health benefits we have in aloe Vera! We all know that adding foods to our diets with naturally occurring vitamins and minerals, such as aloe juice, is recommended for overall health. Drinking aloe Vera juice is a natural and healthful way to replenish the body's supply.

3. Aloe's Daily Dose of Vitamins
Aloe Vera Juice includes Vitamins A, B1, B2, B6, B12, C and E, Folic Acid and Niacin. The human body simply cannot store some of these vitamins; therefore we need to supplement them regularly through our diets. What better way than by drinking a daily dose of Aloe Vera Juice, while at the same time building the body's defense system naturally against oxidative stress?!

2. Anti-inflammatory Properties, a Benefit of Aloe Vera Juice
Aloe Vera juice from the pure aloe Vera gel has 12 natural substances with health benefits that have been shown to inhibit inflammation without side effects. Aloe Vera juice may also support proper joint and muscle mobility.

1. Body-Building Blocks
Amino acids are our body's building blocks. Eight health benefits which are essential and cannot be made by the body are found within aloe Vera! Drinking Aloe Vera Juice on a regular basis allows you to help maintain your health by replenishing your body naturally with these essential amino acids. An analysis of the aloe Vera plant shows that it comes closer than any other known plant to the duplication of essential amino acids. All of this, with just 2 to 4 ounces of aloe Vera juice twice a day [12].

Table 2. In clinical studies of whole-leaf Aloe Vera's internal and external uses during the past six months, I have personally witnessed mitigations or complete resolutions of the following

Abrasions	Hypertension	AIDS
Colds	Stings	Contusions
Herpes simplex & zoster	Actinic keratoses	Insect bites
Staph infections	Constipation	Tendinitis
Acne	Infections	Allergic reactions
Colic	Sunburns	(reversal of
Menstrual cramps &	Ulcerative colitis	anaphalaxis)
irregularity	Arthritis	Dandruff
Ulcerations	Dermatitis	Boils
Allergies	Parasites (especially protozoan	Diabetes
Denture (gum) sores	infections)	Peptic & duodenal ulcers
Nausea	Vaginitis	Varicose veins
Burns	Radiation dermatitis	Bruises
Epstein-Barr virus	Warts	Edema
Chronic fatigue	Viral infections	Psoriasis

I know you must be thinking that no one plant or product could affect - in some positive way - all of the above. If so, it would be a miracle. Webster defines a miracle as "an extraordinary event manifesting outstanding or unusual event, thing, or accomplishment; and a divinely natural occurrence that must be learned humanly." By this definition, it is no wonder why thousands of Aloe Vera users worldwide have commonly referred to it as a "miracle plant."

Aloe Vera is effective when used both internally and externally

When the pharmaceutical industry approaches the question "How does aloe vera gel work?", the answer is to determine which individual chemical component of an aloe vera plant is contributing to its healing activity. This opens the door to commercial extraction and refinement (both processes that CAN be patented).

The key ingredient in aloe Vera is mucopolysaccharides [MPS] (long-chain sugars) that have very strong antiseptic, anti inflammatory, anti-viral, anti tumor and immunomodulatory properties proven scientifically. The polysaccharides or long-chain carbohydrates in aloe have an amazing ability to pass through the stomach and digestive tract and move into the circulatory system without being digested by the enzyme systems in the human digestive tract [3,4]. They are absorbed by a process called endocytosis and taken up into the cell intact. These mannose-containing molecules are then extruded into the circulatory system, where they are able to fulfill their immune-supporting functions.

Aloe Vera gel used externally helps with acne, sunburns, thermal and radiation burns, boils, dandruff, gum sores, dermatitis, edemas, hemorrhoids, inflammation in the eyes, insect bites and stings, psoriasis, skin rashes and irritations, ulcers, varicose veins, warts, wounds and wrinkles.

When you apply freshly squeezed aloe Vera gel on the affected area of the skin, it creates a protective coating which speeds up the healing process, decreases swelling and redness, reduces inflammation, relieves pain, promotes synthesis of collagen in tissue and prevents blisters in case of burns.

Taken internally, it reduces inflammation which is involved in such diseases as ulcerative colitis, arthritis, and gastritis, helps with the reduction of blood sugar with both type I and II diabetes and has a powerful healing effect on AIDS, cancer, tumors and many different immune system disorders. Mucopolysaccharides found in aloe Vera are very effective intracellular antioxidants which is very important in preventing and treating arteriosclerosis, heart disorders and Parkinson's disease.

We recommend you drinking Aloe Vera gel on a regular basis, as well as using beauty products that have a high concentration of stabilized Aloe Vera.

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ANTHROPOMETRIC PARTICULARITIES IN EARLY ADOLESCENCE, 11-14 YEARS OLD

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REZUMAT

Obiectiv. *Aprecierea stării de sănătate în adolescenţa timpurie cu ajutorul antropometriei.* ***Metodologie.*** *Studiul de caz a cuprins 800 de elevi de gimnaziu de 11-14 ani din şcoli timişorene, cu reprezentare egală pe sexe şi pe grupe de vârstă. Metoda de lucru a fost antropometria.* ***Rezultate şi concluzii.*** *Talia şi greutatea medie a fetelor este superioară comparativ cu băieţii, cu 2,3 cm pentru talie, respectiv cu 0,3 kg pentru greutate. Şi ritmul de creştere a taliei şi greutăţii la fete este mai mare. Adolescenţii normoponderali sunt pe primul loc, 80,1%. Supraponderalii sunt pe locul al doilea, 10,9%, iar subponderalii se situează pe locul al treilea, 9%. Valorile medii ale taliei şi greutaţii la băieţii şi fetele de 11-14 ani din Timişoara sunt mai mari decât mediile de referinţă naţionale, rezultând astfel o dezvoltare fizică superioară la adolescenţii timişoreni.*

Cuvinte cheie: *adolescenţi, antropometrie, stare de sănătate*

ABSTRACT

Objective. *Health status appreciation in early adolescence with the help of anthropometry.* ***Methodology.*** *The case study included 800 secondary school students of 11-14 years old from Timisoara schools, with equal representation by gender and age groups. The used work method was anthropometry.* ***Results and conclusions.*** *Height and average weight of girls is higher than boys, with 2.3 cm in height, respectively with 0.3 kg for weight. Even the growth rate of height and weight in girls is higher. Normal weight adolescents are first, 80.1%. Overweight adolescents are on the second place, 10.9% and underweight adolescents are on the third place, 9%. Mean values of height and weight in boys and girls of 11-14 years old from Timisoara are higher than national averages reference, resulting in a superior physical development in adolescents from Timisoara.*

Keywords: *adolescents, anthropometry, health state*

INTRODUCTION

Human development is a dynamic series of morphological and functional changes, lasting almost two decades of its ontogenetic existence, starting from conception and reaching the developmental stage at adults [1,2].

Growth is a quantitative increase in a living system, determined by the prevalence of catabolism on anabolism. Development means increasing the complexity of structures and functions towards reaching maturity in morphological and functional significance. It is recorded a speed that can be determined and entered in characteristic curves. Growth is limited in time, as is the existence of that being [3,4].

Each person, in terms of phylogenetic and ontogenetic development is the result of a complex formative process strongly conditioned by internal factors (genetic, endocrine, metabolic), but especially ecological factors, mesological (geographical environment, climate, nutrition, housing, urbanization, socio-economic conditions and living standards, training and institutional education, infectious and non infectious pathogens) [5.6].

The objective of this study was to evaluate the health status in early adolescence with the help of anthropometry.

METHODOLOGY

Material

The case study included a sample of secondary school students from Timis County, which totaled 800 students from schools and high schools from urban area. In the sample, the gender distribution was equal, 50% (400) for boys and girls. The age of the students in the study was between 11-14 years old, age and sex groups consisting of 100 adolescents.

Anthropometry

The anthropometric indices determined were:

- Height

After the age of 3 years, the measurement is done with the anthropometer that has a fixed vertical rod, graduated in cm and mm, and a mobile slider on the rod. The person, barefoot and dressed summary (for the posture), sits on a flat surface (device platform), with weight distributed equally on the 2 legs, heels together, line of sight perpendicular to the body, arms free along the body, and direct contact with the vertical plane of the rod: the head, back, buttocks, heels. Subject is required to inspire and to remain in that position of full extension. Bring the slider to the highest level of the head. Record the data in cm and mm.

- Weight

It is determined with the people scale regularly calibrated. The subject, dressed as summary possible (for cultural reasons), is situated in the center of the scale platform, with the weight distributed equally on both feet. Scoring is done in kg and hundred grams.

Data processing and interpretation of physical development included:

- Sigma class method

Allows comparison of individual indicators with average established levels for the country or geographical area. Thereby, we know if a subject fits in average values for his age and sex, below or above these values and where exactly.

Individual measurement data is processed, the indices used in ordinary studies are weighted arithmetic mean (XP) and standard deviation (σ). If we add or drop the standard deviation to the weighted arithmetic mean, we get the sigma classes:

- Medium values : $Xp + \sigma$
- Large values: $Xp + 2\sigma$
- Very high values: $XP + 3\sigma$
- Low values: $Xp - 2\sigma$

- Very small values: Xp - 3σ.

• Correlative method

With this method we can know whether a subject is harmonic (normal weighted) or under-weighted non harmonic (with less weight) or over-weighted nonharmonic (with extra weight). The harmonic has the weight and height in the same sigma class. The under-weighted non harmonic has the weight in a sigma class below the height and the over-weighted non harmonic has the

weight in a superior sigma class to height [7-14].

RESULTS AND DISCUSSIONS

1. THE AVERAGE LEVEL OF PHYSICAL DEVELOPMENT

1.1. The average level of physical development in boys (Table 1)

Table 1. The average level of physical development in boys of 11-14 years old

Age (years)	Height (cm)		Weight (kg)	
	$\overline{Xp}$	Σ	$\overline{Xp}$	σ
11	144.5	5.7	34.9	4.6
12	148.8	5.9	38.5	4.5
13	156.9	6.2	43.8	5.0
14	162.8	6.3	50.1	6.2

1.2. The average level of physical development in girls (Table 2)

Table 2. The average level of physical development in girls of 11-14 years old

Age (years)	Height (cm)		Weight (kg)	
	$\overline{Xp}$	Σ	$\overline{Xp}$	σ
11	146.8	6.5	35.2	6.5
12	149.9	7.3	40.3	6.3
13	157.6	7.4	45.0	6.0
14	164.1	5.8	51.1	6.3

In the 11-14 years age range, height and weight are characterized by a continuous increase in both sexes.

Average height in boys increased with 4.3 cm between 11-12 years, 8.1 cm between 12-13 years and with 5.9 cm between 13-14 years. Average height in girls increased with 3.1 cm between 11-12 years, 7.7 cm between 12-13 years and with 6.5 cm between 13-14 years.
The average weight of boys increased with 3.6 kg between 11-12 years, 5.3 kg between 12-13 years and 6.3 kg between 13-14 years.

Average weight of girls increased with 5.1 kg between 11-12 years, 4.7 kg between 12-13 years, and with 6.1 kg between 13-14 years.

1.3. Mean values correlation of height with age (Figure 1, 2)

From the correlation graphic of the average values of height with age, results higher mean values at girls compared to boys of same age, with 2.3 cm at 11 years, 1.1 cm at 12 years, 0.7 cm at 13 years and 1.3 cm at 14 years.
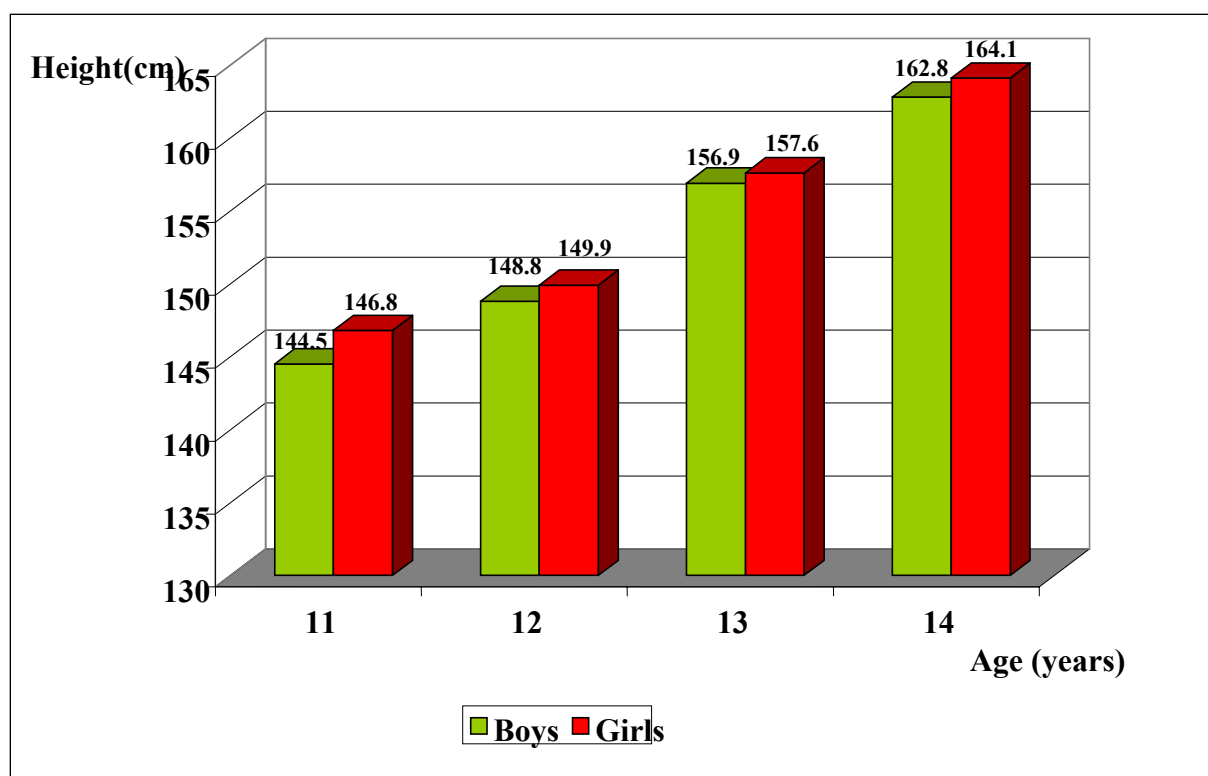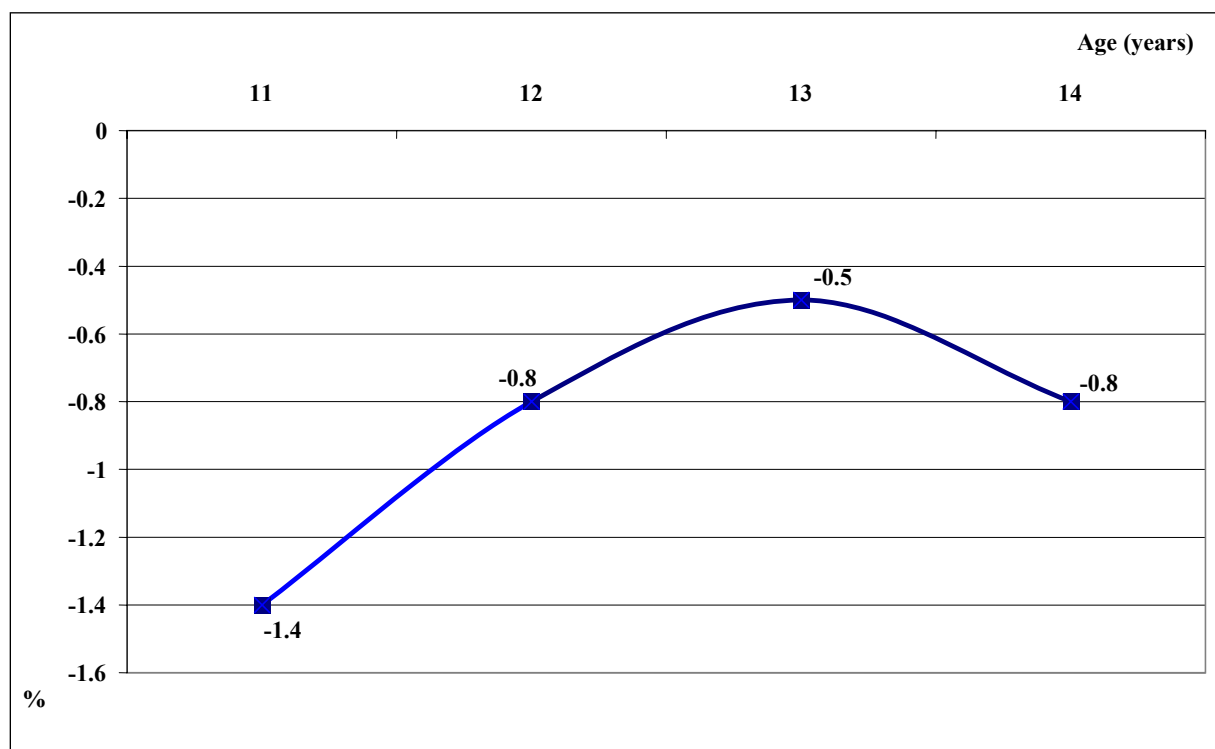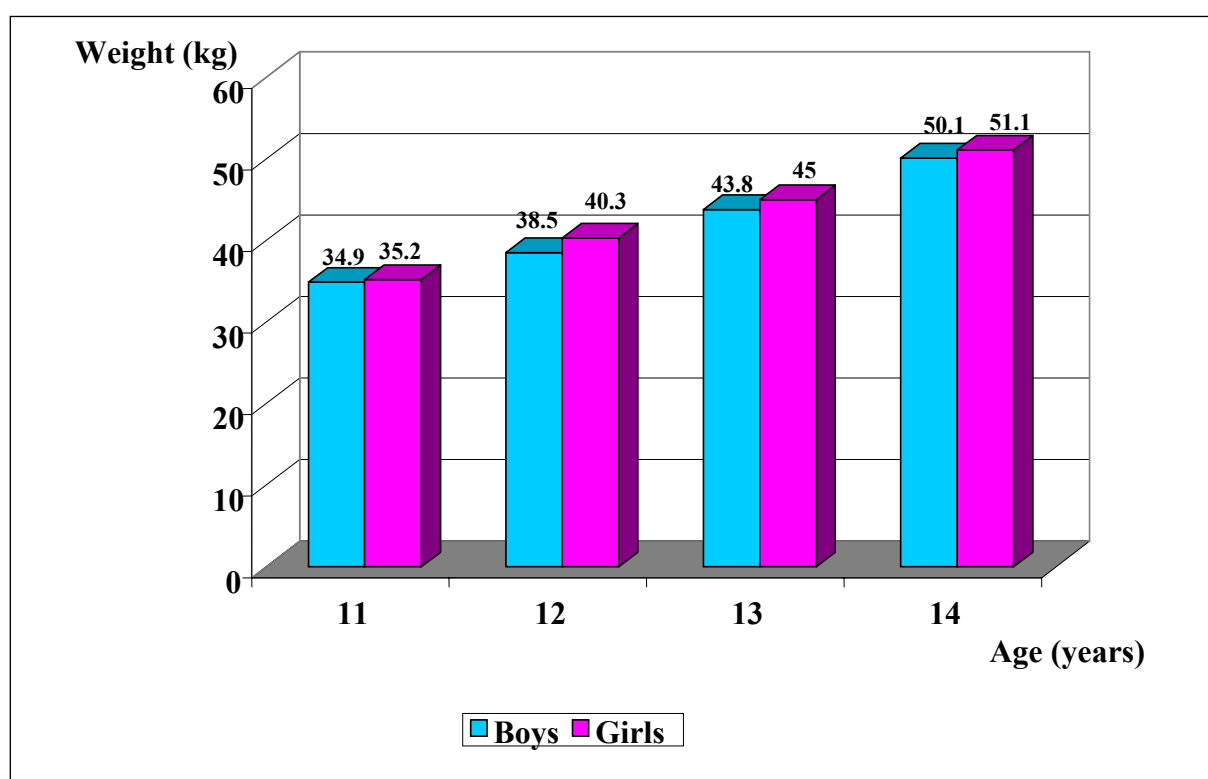
Figure 1. Correlation of the mean values of height with age in boys and girls of 11-14 years old

* Percentage difference: 100x [height (weight) boys / height (weight) girls - 1]

Figure 2. Distribution of the difference between height mean values at boys and girls of 11-14 years old

Between 11-14 years, the percentage differences calculated to compare height averages corresponding to boys and girls, are negative at boys: -1.4% at 11 years, -0.8% at 12 years, -0.5% at 13 years and -0.8% at 14 years, indicating an upper average of height increase at girls.

1.4. Correlation between mean values of weight with age (Figure 3.4)

From the correlation graphic of average values of weight with age, are also observed

higher mean values increased at girls compared to boys, 0.3 kg at 11 years old, 3.3 kg at 12 years old, 1.2 kg at 13 year old and 1.0 kg at 14 years old (Figure 3).

Between 11-14 years, the percentage differences calculated to compare the mean values of weight corresponding to boys and girls, are negative at boys: -0.9% at 11 years old, -4.5% at 12 years old, -2.7% at 13 years old and -2.0% at 14 years old, indicating an upper average of weight increase at girls (Figure 4).
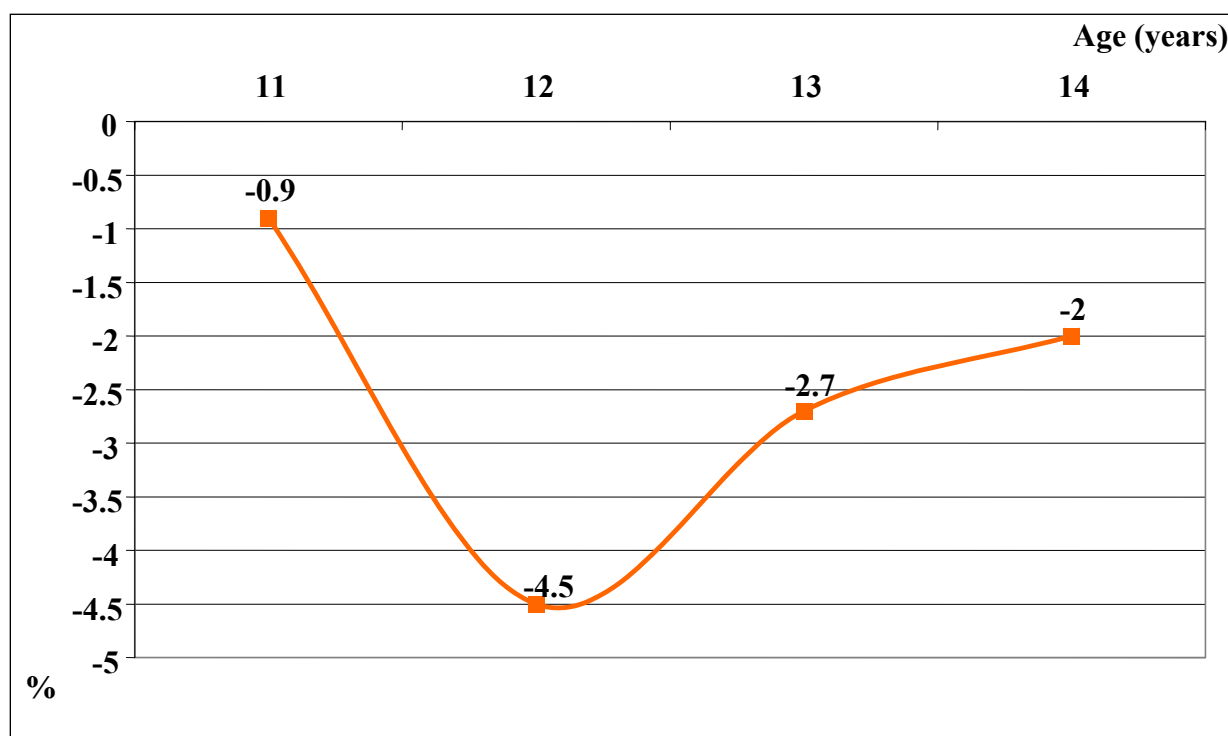

Figure 3. Correlation between mean values of weight with age in boys and girls of 11-14 years old

* Percentage difference: 100x [height (weight) boys / height (weight) girls - 1]
Figure 4. Distribution of the difference between mean values of weight in boys and girls of 11-14 years old

2. HEIGHT AND WEIGHT GROWTH RATE AT BOYS AND GIRLS (TABLE 3)

Table 3. Growth rate of height and weight averages for boys and girls of 11-14 years old

Age (years)	Growth rate of height averages (cm)		Growth rate of weight averages (kg)	
	Boys	**Girls**	**Boys**	**Girls**
11/12	4.3	3.1	3.6	5.1
12/13	8.1	7.7	5.3	4.7
13/14	5.9	6.5	6.3	6.1
11/14	**18.3**	**17.3**	**15.2**	**15.9**

At boys, between 11-14 years, average height has increased by 18.3 cm and average weight, with 15.2 kg.

At girls, the average height has increased by 17.3 cm and average weight, with 15.9 kg. Male and female specific issues recorded at the researched group overlap the increasing general trend of the human body: a more marked growth of height at boys, and weight at girls. At age 14, differences in averages

for the two sexes are relatively small, 1 cm in height and 0.7 kg in weight.

The 11-14 years period is the only one in the human evolution, when the average height and weight are higher at girls compared to boys. This period is between the two crosses of the mean correlation curves with age and sex. Before the first cross, between 9-11 years old, and the second cross, between 14-15 years old, average height and weight are higher in males than in females.

3. HARMONIC/NON HARMONIC PHYSICAL DEVELOPMENT DIAGNOSTIC (Table 4-8, Figure 5-7)

Arithmetic mean values and standard deviation allowed delimitation of the somatometric indicators height and weight, in part (Table 4.5).

Table 4. Variability indices of height at 11-14 years old

Age (years)	Sex	Average (cm)	Sigma (cm)	Indices					
				very small	small	middle		big	very big
				$\overline{Xp}-3\sigma$	$\overline{Xp}-2\sigma$	$\overline{Xp}-\sigma$	$\overline{Xp}+\sigma$	$\overline{Xp}+2\sigma$	$\overline{Xp}+3\sigma$
11	Boys	144.5	5.7	127.4	133.1	138.8	150.2	155.9	161.6
	Girls	146.8	6.5	127.3	133.8	140.3	153.3	159.8	166.3
12	Boys	148.8	5.9	131.1	137.0	142.9	154.7	160.6	166.5
	Girls	149.9	7.3	128.0	135.3	142.6	157.2	164.5	171.8
13	Boys	156.9	6.2	138.3	144.5	150.7	163.1	169.3	175.5
	Girls	157.6	7.4	135.4	142.8	150.2	165.0	172.4	179.8
14	Boys	162.8	6.3	143.9	150.2	156.5	169.1	175.4	181.7
	Girls	164.1	5.8	146.7	152.5	158.3	169.9	175.7	181.5

Table 5. Variability indices of weight at 11-14 years old

Age (years)	Sex	Average (cm)	Sigma (cm)	Indices					
				very small	small	middle		big	very big
				$\overline{Xp}-3\sigma$	$\overline{Xp}-2\sigma$	$\overline{Xp}-\sigma$	$\overline{Xp}+\sigma$	$\overline{Xp}+2\sigma$	$\overline{Xp}+3\sigma$
11	Boys	34.9	4.6	21.1	25.7	30.3	39.5	44.1	48.7
	Girls	35.2	6.5	15.7	22.2	28.7	41.7	48.2	54.7
12	Boys	38.5	4.5	25.0	29.5	34.0	43.0	47.5	52.0
	Girls	40.3	6.2	21.7	27.9	34.1	46.5	52.7	58.9
13	Boys	43.8	5.0	28.8	33.8	38.8	48.8	53.8	58.8
	Girls	45.0	6.0	27.0	33.0	39.0	51.0	57.0	63.0
14	Boys	50.1	6.2	31.5	37.7	43.9	56.3	62.5	68.7
	Girls	51.1	6.3	32.2	38.5	44.8	57.4	63.7	70.0

For establishing the diagnostic of physical development of each teenager from the studied group it was followed his rank in the height and weight sigma classes. The results are presented in the next three tables and three graphs.

Table 6. Distribution of boys and girls of 11-14 years old with harmonic physical development

Age (years)	Sex	Number	Harmonics with indices:									
			very small		small		middle		big		very big	
			nr	%	nr	%	nr	%	nr	%	nr	%
11	Boys	76	-	-	18	23.7	38	50.0	20	26.3	-	-
	Girls	84	-	-	14	16.7	45	53.6	25	29.7	-	-
12	Boys	75	-	-	19	25.3	38	50.7	18	24.0	-	-
	Girls	81	-	-	16	19.8	44	54.3	21	25.9	-	-
13	Boys	78	-	-	18	23.1	42	53.8	18	23.1	-	-
	Girls	82	-	-	15	18.3	44	53.7	23	28.0	-	-
14	Boys	79	-	-	17	21.5	42	53.2	20	25.3	-	-
	Girls	86	-	-	13	15.1	47	54.7	26	30.2	-	-
Total of 11-14 years old	**Boys**	**308**	**-**	**-**	**72**	**23.4**	**160**	**51.9**	**76**	**24.7**	**-**	**-**
	Girls	**333**	**-**	**-**	**58**	**17.4**	**180**	**54.1**	**95**	**28.5**	**-**	**-**
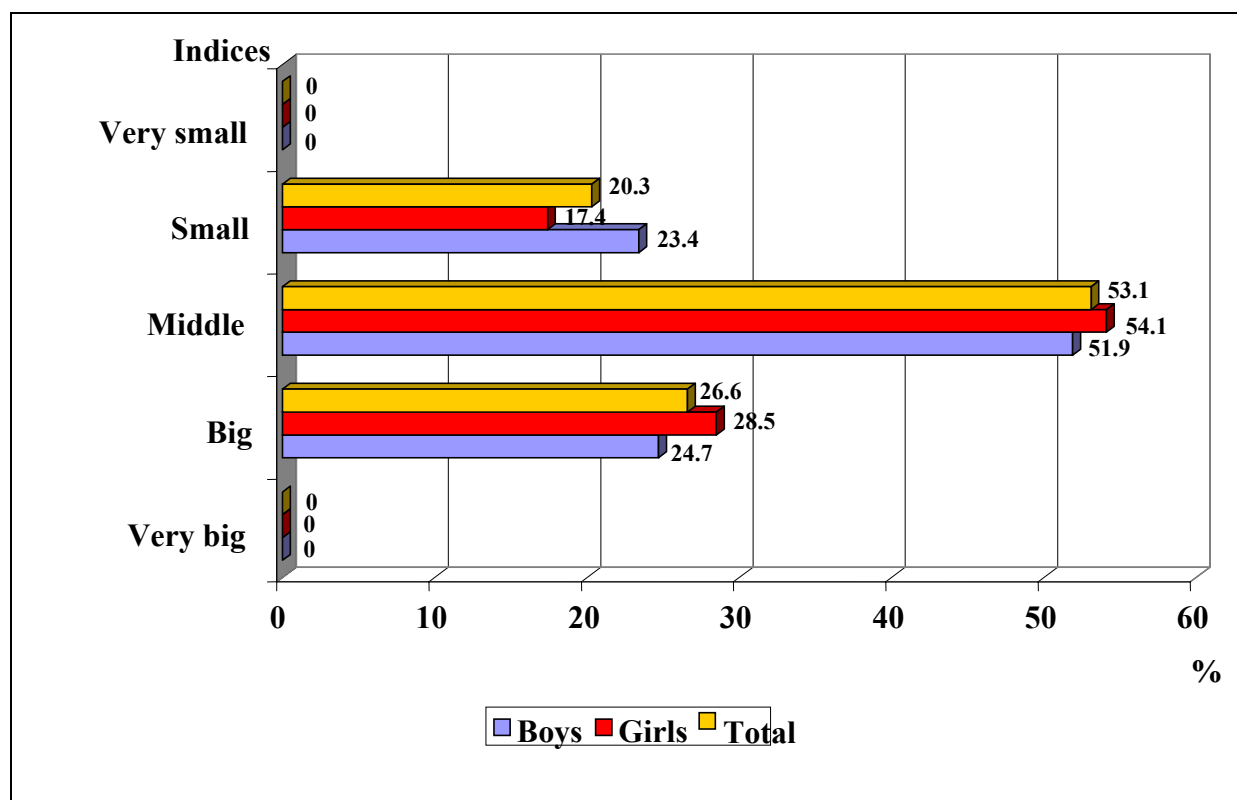
Figure 5. Percentage distribution of boys and girls of 11-14 years old with harmonic physical development

Table 7. Distribution of boys and girls of 11-14 years old with non harmonic physical development

Age (years)	Sex	Number	Non harmonics			
			overweight		underweight	
			nr	%	nr	%
11	Boys	24	9	37.5	15	62.5
	Girls	16	13	81.3	3	18.7
12	Boys	25	9	36.0	16	64.0
	Girls	19	15	78.9	4	21.1
13	Boys	22	8	36.4	14	63.6
	Girls	18	14	77.8	4	22.2
14	Boys	21	7	33.3	14	66.7
	Girls	14	12	85.7	2	14.3
Total of 11-14 years old	**Boys**	**92**	**33**	**35.9**	**59**	**64.1**
	Girls	**67**	**54**	**80.6**	**13**	**19.4**
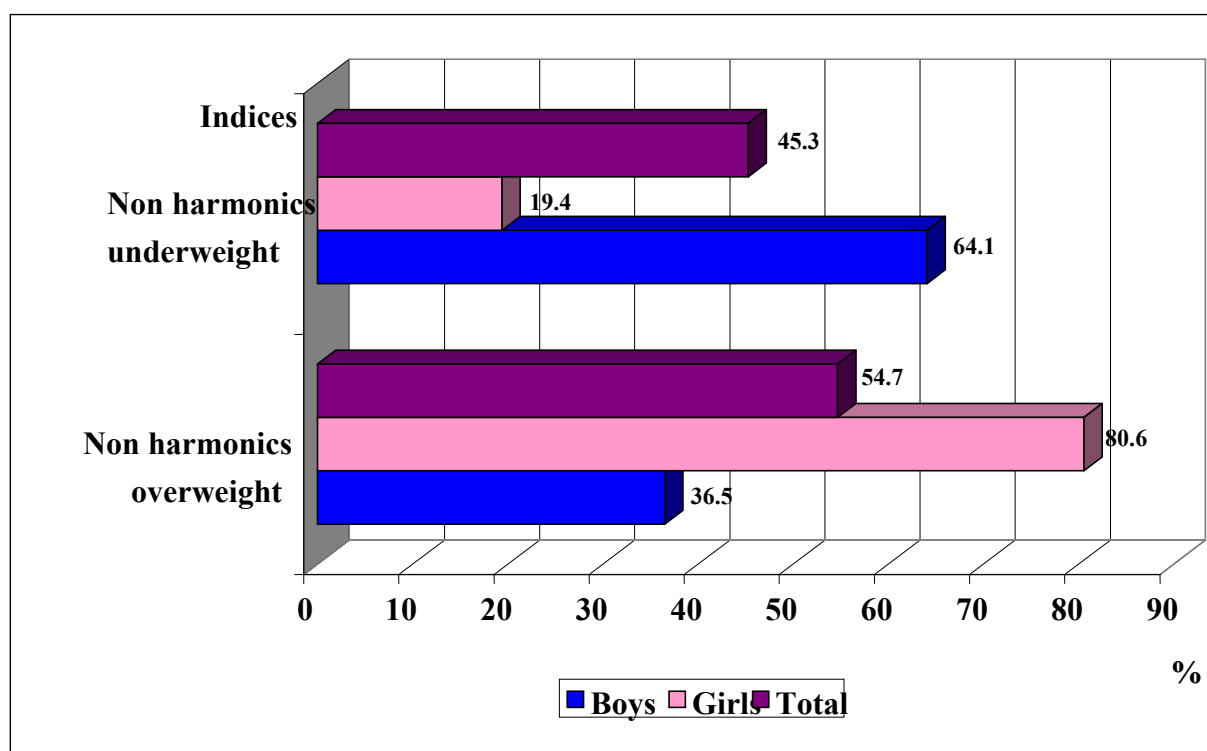
Figure 6. Percentage distribution of boys and girls of 11-14 years old with non harmonic physical development

Table 8. Harmonic / non harmonic physical development at boys and girls of 11-14 years old

General character of development	Specifications	Total		Boys		Girls	
		nr	%	nr	%	nr	%
harmonic	both ratios below the average limits	130	20.3	72	23.4	58	17.4
	indicators both within the media	340	53.1	160	52.0	180	54.1
	both ratios above the average	171	26.6	76	24.6	95	28.5
Total harmonics		641	100.0	308	100.0	333	100.0
Non harmonic	overweight	87	54.7	33	35.9	54	80.6
	underweight	72	45.3	59	64.1	13	19.4
Total non harmonics		159	100.0	92	100.0	67	100.0
Total of 11-14 ani old		**800**	**100.0**	**400**	**100.0**	**400**	**100.0**
harmonics		**641**	**80.1**	**308**	**77.0**	**333**	**83.3**
underweight non harmonics		**72**	**9.0**	**59**	**14.8**	**13**	**3.2**
overweight non harmonics		**87**	**10.9**	**33**	**8.2**	**54**	**13.5**

Group segment statistic showing harmonic physical development

It was found that a number of 641 adolescents aged 11-14 years old, representing 80.1% of the researched group, presented a harmonic physical development (height and weight fell within the same sigma classes). By sexes, boys have a percentage of 77.0% (308) and girls 83.3% (333) higher than boys.

Adolescents with harmonic physical development indicators below norm limits, represents 20.3% (130) harmonics, with the following distribution:
- by indices:
    - very small indices (XP - 3σ), 0%
    - small indices (XP - 2σ), 20.3% (130)
- by age: from 15.1% (13) to 25.31% (19), for ages between 11-14 years
- by sex: 23.4% (72) of boys and 17.4% (58) of girls with harmonic physical development, with the predominance of boys.

Adolescents with harmonic physical development and indicators within the normal (middle) limits, present a percentage of 53.1% (340), and are distributed as follows:
- by age: between 50.0% (38) and 54.7% (47) for ages 11-14 years
- by sex: 52.0% (160) of boys and 54.1% (180) of girls with harmonic physical development, with the predominance of girls compared with boys with medium indices of harmonic physical development.

Adolescents with harmonic physical development and indicators above the norm limits are 6.6% (171) and are distributed as follows:
- by indices:
    - major indices (Xp + 2σ), 26.6% (171)
    - very high indices (XP + 3σ), 0%
- by age: between 23.1% (18) and 30.2% (26), aged 11-14 years
- by sex: 24.6% (76) of boys and 28.5% (95) of girls with harmonic physical

development. Girls prevail with high indices of harmonic physical development, compared with boys.

Group segment statistic showing non harmonic physical development

A total of 159 adolescents, 19.9% of the researched group, present a non harmonic physical development, 23% (92) among boys and 16.7% (67) among the girls.

Non harmonics have been grouped as follows:

- by indices: - overweight, with extra weight, 54.7% (87), overweight girls are in percentage of 80.6% (54), and overweight boys in percentage of 35.9% (33)
 - underweight, with less weight, 45.3% (72) underweight girls are percentage of 19.4% (13), and underweight boys in percentage of 64.1% (59)
  - by age: between 14% (14) and 25% (25) for adolescents of 11-14 years old.
Underweight boys and overweight girls predominate.
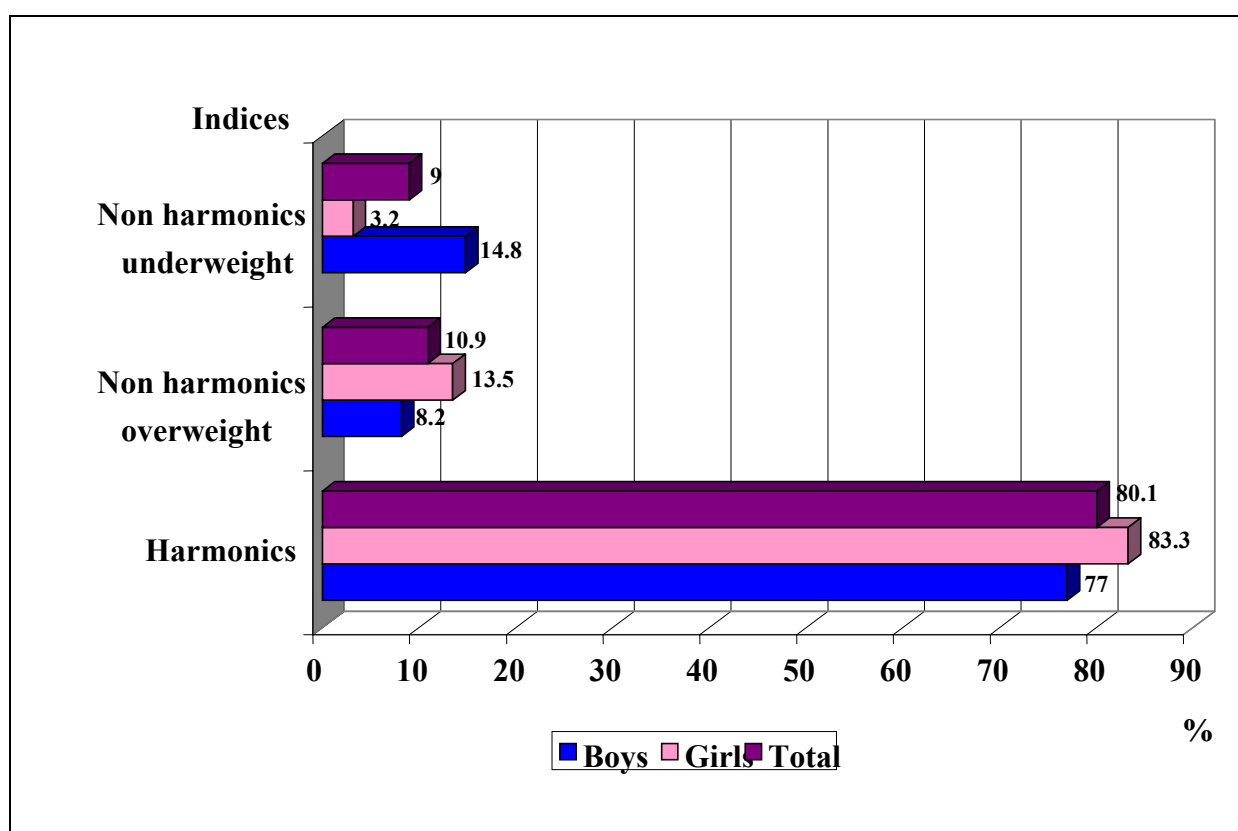
Figure 7. Percentage distribution of boys and girls of 11-14 years old with harmonic / non harmonic development

4. COMPARISON OF MEAN VALUES OF HEIGHT AND WEIGHT WITH MEDIA GUIDE FOR ROMANIA, 1999, URBAN AREA

In Romania, since 1950 is held every seven years, population-investigation in developing guide standards for physical

development of children and adolescents, 0-18 years.

Our results were compared with average physical development in Romania, urban area, the last stage of the study in 1999:

> - Compared with the average national boys height guide, the average height of 11-14 years old

boys from Timis county is higher. Percentage differences were calculated between 1.2-2.2%. Percentage difference: 100x [height (weight) boys / size (weight) girls - 1].
- Compared with the average national guidance on girls height, the average height of girls from Timis county of 11-14 years old is higher. Percentage differences were calculated between 2-4%.
- Compared with the average national guidance on boys weight, the average weight of boys from Timis county of 11-14 years old is higher. Percentage differences between 2.7-3.6% were obtained between age of 11-14 years.
- Compared with the average national guidance on girls weight, the average weight of 11-14 years old girls from Timis county is higher. Percentage differences were calculated between 1.9-5% [15].

CONCLUSIONS

Growth level and rate
Graphical representation of average values of height and weight by age and sex, show upward curves. Between age of 11-14 years, average height and weight of girls is higher than boys, with 2.3 cm for height, respectively 0.3 kg for weight.
Height growth rate is different for both genders: rising of 16 cm for boys and 19.6 cm for girls.

Weight growth rate is also different: increase of 15.2 kg at boys and 15.9 kg at girls.

Harmonic and non harmonic physical development
Teenagers with harmonic physical development or normal weighted come first, 80.1%. Normoponderal girls are more numerous than boys, 6.3 percent in the early adolescence.
Non harmonic physical development of adolescents with extra weight or over-weighted are on the second place, 10.9%. There are more over-weighted girls in early adolescence by 5.3 percent compared with boys.
Adolescents with non harmonic physical development with less weight or underweighted are on the third place, 9%.
In the absence of medical causes and living conditions with obvious negative influence on health status, the diagnosed non harmonies may be associated with intense puberty changes.

Comparing the average values of height and weight for adolescents from Timis county with the Romanian guidelines, 1999, urban area
Height and weight mean values in boys and girls of 11-14 years old from Timis County, are higher than the reference national averages, resulting in a superior physical development in adolescents from Timis county.

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EPIDEMIOLOGICAL TRENDS OF INFLAMMATORY BOWEL DISEASES (IBD) IN THE WEST PART OF ROMANIA

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REZUMAT

Scopul studiului este de a evalua tendinţele epidemiologice ale colitei ulceroase (UC) şi bolii Crohn (CD) în partea de vest a României, pe o perioada de 5 ani. Am inclus în studiul nostru pacienţii diagnosticaţi cu boli inflamatorii intestinale în timpul perioadei 2004-2008, în 12 centre de Gastroenterologie situate în partea de vest a ţării. Am analizat incidenţa colitei ulceroase şi bolii Crohn, utilizând următoarele variabile: vârstă, sex, tip de boală inflamatorie intestinală, gravitatea atacului şi provenienţa pacienţilor (mediul urban / rural). Au fost diagnosticaţi 1085 de pacienţi cu boli inflamatorii intestinale în timpul acestei perioade, 819 cazuri de colita ulceroasa(UC) şi 266 cazuri de boala Crohn(CD). Tendinţa epidemiologică a fost stabilă în ultimii 5 ani pentru bolile inflamatorii intestinale (IBD) în partea de vest din România, cu o incidenţă mai mare pentru colita ulceroasă (UC).

Cuvinte cheie: *boli inflamatorii intestinale, colita ulceroasă, boala Crohn.*

ABSTRACT

The aim of the research is to evaluate the epidemiological trends of ulcerative colitis (UC) and Crohn's disease (CD) in the west part of Romania, on a 5 years period. We included in our study the patients diagnosed with IBD during the period of 2004-2008, in 12 centers of gastroenterology situated in the west part of the country. We analyzed the incidence of UC and CD, and also the following variables: age, gender, IBD type, severity of the attack and provenience of the patients (urban/rural areas). There were diagnosed 1085 patients with IBD during this period, 819 cases of UC and 266 cases of CD. The epidemiological trend was stable in the last 5 years for IBD in the west part of Romania, with a higher incidence for UC.

Keywords: *inflammatory bowel diseases, ulcerative colitis, Crohn's disease*

BACKGROUND

More than 3 million people are estimated to live with IBD. Incidences are increasing in the Western world and IBD is as frequent as Insulin Dependent Diabetes. Studies from literature show an increasing incidence and prevalence of IBD in Eastern Europe [1-17].

AIM

The aim of our work is to evaluate the epidemiological trends of ulcerative colitis (UC) and Crohn's disease (CD) in the west part of Romania, on a 5 years period.

MATERIAL AND METHODS

We included in our study the patients diagnosed with IBD during the period of 2004-2008, in 12 centers of gastroenterology situated in the west part of the country.

We analyzed the incidence of UC and CD, and also the following variables:
- age,
- gender,
- IBD type,
- severity of the attack and provenience of the patients (urban/rural areas).

RESULTS

There were diagnosed 1085 patients with IBD during this period, 819 cases of UC(170/2004, 173/2005, 162/2006, 162/2007 and 149/2008) and 266 cases of CD(46/2004, 64/2005, 54/2006, 52/2007 and 50/2008).
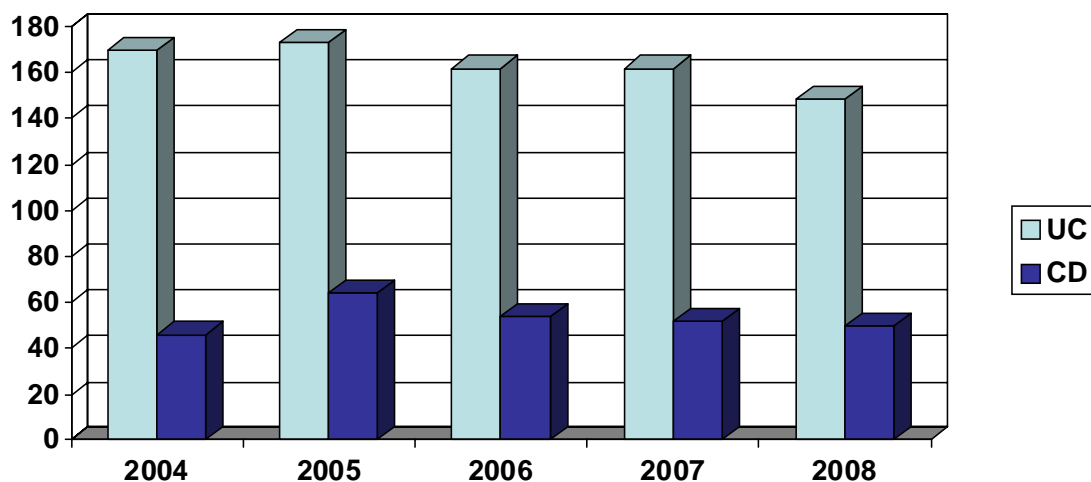
Figure 1. Incidence of the 5 years studied of ulcerative colitis (UC) and Crohn's disease (CD) in the west part of Romania

The average incidence of the 5 years studied was: 3.06/100.000 new cases per year for UC and 1.05/100.000 new cases per year for CD, with a UC/CD ratio of 3.08. UC: 69.5% of patients were from urban and 30.5% from rural areas (Figure 1).

Regarding UC, there were 493 males (60.2%) and 326 females (39.8%) diagnosed (Figure 2).
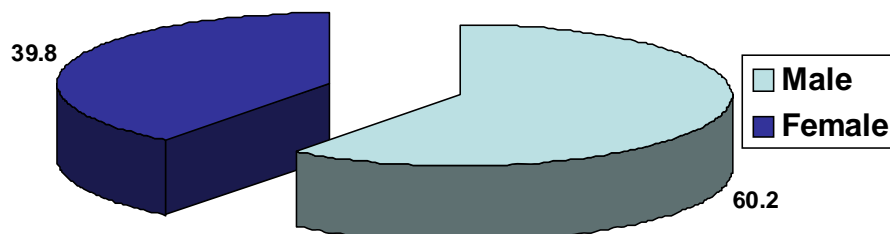
Figure 2. Sex distribution of ulcerative colitis (UC)

The age distribution was as follows: 16-35 years-26.7% of patients, 36-54 years-39.8% and 55-75 years-33.5% (Figure 3).
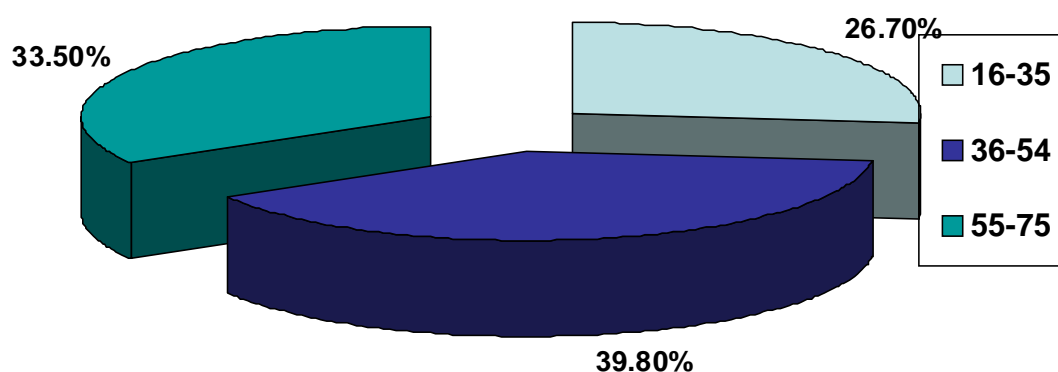
Figure 3. Age distribution of ulcerative colitis (UC)

According to severity, 33.5% were mild, 33.6% moderate and 32.9% severe forms (Figure 4).
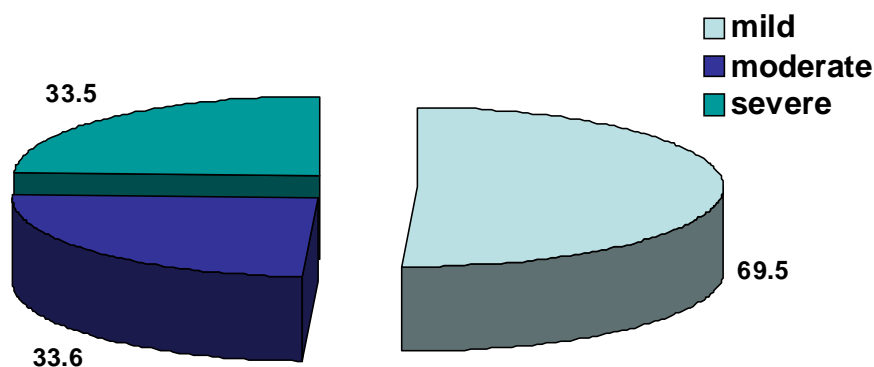
Figure 4. Distribution of ulcerative colitis (UC) according to its severity

Crohn's disease (CD): 70.8% of patients were from urban and 29.2% from rural areas.

There were 123 males (46.2%) and 143 females (53.8%) diagnosed with CD (Figure 5).
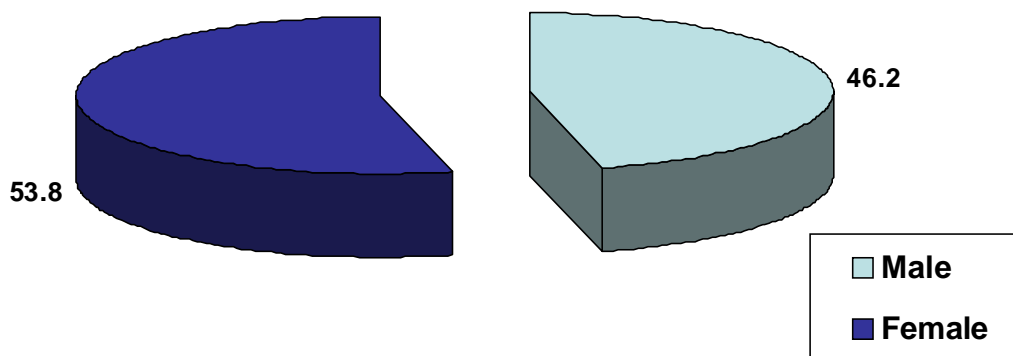
Figure 5. Sex distribution of Crohn's disease (CD)

The age distribution was as follows: 16-35 years - 37.2% of patients, 36-54 years - 40.4% and 55-75 years - 22.4% (Figure 6).
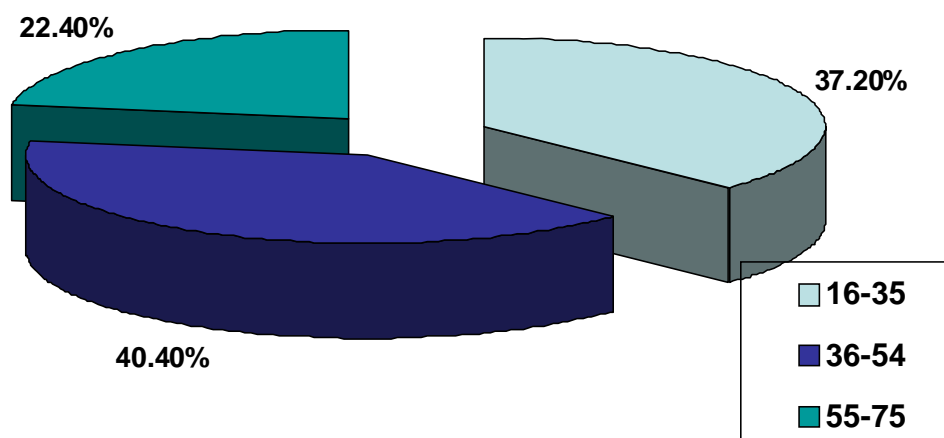
Figure 6. Age distribution of Crohn's disease (CD)

According to the severity, 48.7% were mild, 24.8% moderate and 26.5% severe forms (Figure 7).
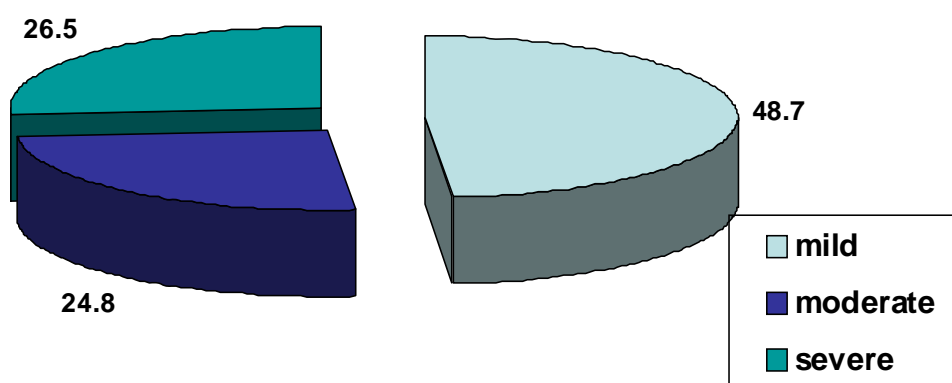
Figure 7. Distribution of Crohn's disease (CD)according to its severity

CONCLUSIONS

The epidemiological trend was stable in the last 5 years for IBD in the west part of Romania, with a higher incidence for UC.

There was a predominance of the disease in young and medium-aged patients, from urban areas, presenting in about 2/3 of cases or more, mild/moderate forms of disease.

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