ADOLESCENT MALNUTRITION FROM ANTHROPOLOGICAL PERSPECTIVE

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The anthropological concept of nutritional health was launched by the WHO ten years ago, with the recommendation of introducing the anthropological methodology in all the studies regarding the population's health status. In this way, WHO constructed an anthropological database that constituted the basis of "an international population of anthropological reference", serving the assessment of nutritional health status. In this context, the Romanian researches of nutritional anthropology will represent an original contribution to the construction of "an European population of anthropological reference" as basis of evaluation of the nutritional health status in EU populations. Currently, not only the value of the action towards adolescent health, but also the long-term costs of its lack are largely recognized. The use of anthropology in the assessment of nutritional health status will lead to the precocious diagnosis of the potentially pathological deviations like growth retardation or other faults, thus indicating the nutritional dysfunctions and the need of medical interventions before they being clinically diagnosed. The establishment of an anthropological classification scale of the nutritional health will allow an evaluation of the risks of subsequent diseases in individuals and population as well, known that malnutrition, untreated during childhood or adolescence, will be refound in adult population, followed by chronic and degenerative co-morbidities. Promoting the adolescent health, prevention of the health problems before their emergence is more cost-effective then their treatment, especially when it may be too late to cure them. Within the Romanian medical anthropological research regarding the nutritional health, our paper approaches for the first time the topic of malnutrition as a negative deviation, a growth abnormality, through transversal studies carried out in 1980, 1998, and 2004, bearing in mind that a major aspect of prevention of the health problems in adults resides in promoting a healthy nutrition in adolescents, who often consider themselves invulnerable to diseases and do not consider preserving the capital of their health for the future.

Key words: Malnutrition; Underweight; Adolescence; Secular trend; Romania.

INTRODUCTION

Anthropologically speaking, malnutrition is a disturbance of the nutrition status, due to the an improper or insufficient diet and it is characterized by a low weight-for-age, associated with a deficiency in micronutrients such as vitamins and trace minerals, nutritional anemia and rickets.

Malnutrition, appreciate WHO, is the most important risk factor of morbidity and mortality among children worldwide, affecting all the body organs, stopping the growth and development, damaging the immunological functions and thus increasing the predisposition to chronic and acute infections.

Almost 418 million of people are estimated to be affected by emergency situations all over the world; therefore a high number of adolescents may present an increased risk of being exposed to severe malnutrition (Helene Delisic, 2000).

According to the WHO's statistics, 26 million children too small to live are born each year, because

their mothers have suffered of malnutrition; more than 230 million children under school age from the developing countries show a growth retardation due to malnutrition resulting from poor intake of specific nutrients. More than 7 million children are affected by malnutrition aggravated by infectious diseases and this doubles the premature mortality rate.

A deprivation dwarfism or a nutritional dwarfism, responsible for the increasing frequency of chromosomal aberrations is often brought into discussion.

As a result of its researches on the nutritional health status in the Romanian population, anthropology possesses an anthropometrical database that allows the precocious diagnosis of the potentially pathological tendencies such as underweight in population.

Our study will analyze the following data:

1. The variability of underweight prevalence according to sex and age among adolescents aged 17–24 years between 1980 and 1998 (the microevolutionary aspects – secular trend).
2. The variability of underweight prevalence according to sex and age in the adult population aged 25–55 years between 1980 and 1998 (the microevolutionary aspects – secular trend).
3. The ecological variability of underweight.
4. The geographical variability of underweight in the main historical provinces of Romania.

We underline that the present paper represents an original population study in the Romanian anthropological research on malnutrition among Romanian adolescents.

Providing data on the growth and development phenomena as basis of assessment of nutritional health status and the risk of malnutrition, the anthropological research proves its biological relevance, while its findings on nutritional deprivation, poverty or starvation reveals its social dimension.

Thus, the Romanian anthropological research will respond to EU requirements, aligning itself to the WHO's and UNICEF researches in the field of monitoring the nutritional health status in teenagers through common programs designed for youth, where a special focus is put on the improvement of knowledge, capacities, and access to counseling and modern health services.

METHODOLOGY

In order to define the nutritional health status from an anthropologic viewpoint, we resorted to the variability of some body characteristics (stature, weight, thorax perimeter, waist) and to the body mass index recommended by the WHO since 1995.

In the present paper, we used the Quetelet scale of classification, where malnutrition covers 3 levels of gravity: first level is represented by the moderate underweight (BMI between 17 and 18.49), the second level by the severe underweight (BMI between 16 and 16.99), and the last category by very severe underweight (BMI below 16).

The Z-score values that represent sigmatic deviations may be used to assess underweight, too.

We investigated the prevalence of underweight among adolescents and adult populations by time and space, approaching the microevolutionary changes aspects of body mass variability during long periods of time, taking also into account the long transition Romanian society has undergone.

RESULTS ANALYSIS

In the present, the WHO considers the scientific data on the assessment of malnutrition in adolescents still insufficient.

The most important criterion for ascertaining the severe malnutrition in adolescents is a BMI below the 5th percentile or a value below 16 in the Quetelet scale of BMI classification.

We must specify the effects of malnutrition during adolescence since these justify the interest in the prevalence of malnutrition both in developing countries and, though apparently a paradox, in the highly industrialized countries.

Underweight is mainly a consequence of past and present malnutrition.

The biological and social risk factors, beginning with a poor nutrition in the prenatal period and continued with a malnutrition in childhood and adolescence, combined with the harmful influences of the nutritional behavior constitute a breeding ground for the chronic diseases of adult life.

We analyzed the variability of underweight prevalence in two population researches accomplished at 18 years distance (1980 and 1998) in order to signalize the microevolutionary changes in body sizes and body mass index.

A sample was composed of 3553 subjects, aged 17 to 24 years: 1833 in the year of 1980 and 1720 in the year of 1998.

We reached the following results: BMI variability in girls' series differs significantly in comparison with the one in boys' series; between 1980 and 1998, microevolution of the adolescent body constitution recorded changes in prevalence;

the most spectacular modification was found in the girls' series of the year 1998, where the underweight prevalence for the 17–24 year olds indicates a malnutrition at least surprising.

Analyzing the variability of underweight prevalence among teenagers aged 17–24 years, according to sex, for a period of 18 years, corresponding to the distance between the two studies, we noted an average underweight prevalence of 2.57% in the boys' series of the year 1980 (0.00% presenting very severe underweight, 2.42% severe underweight and 0.15% moderate underweight) (Fig. 1), and an average underweight prevalence of 5.27% in the girls' series of the year 1980 (0.00% presenting very severe underweight, 0.59% severe underweight and 4.68% moderate underweight) (Fig. 3).

As for the year of 1998, the boys present an average underweight prevalence of 15.32% (from whom 1.55% are characterized by very severe underweight, 4.00% by severe underweight and 9.68% by moderate underweight) (Fig. 2), while the girls' series presents an average underweight prevalence of 24.34% (distributed as it follows: 1.27% of cases with very severe underweight, 4.76% with severe underweight and 18.31% with moderate underweight) (Fig. 4).

We concluded that in a period of 18 years, the underweight prevalence increased significantly, both in men (from 2.57% to 15.32%) and women (from 5.27% to 24.34%). The female series studied in 1998 has an underweight prevalence equivalent to a quarter of the entire population analyzed, constituting a major risk factor for health during adolescence and later.

Analysis of Z-score values for the main body sizes among children and adolescents aged 11–18 years (studied in 2004) illustrates the effects of malnutrition in the girls' series through a physical growth significantly lower in comparison with the boys' series (Figs. 5 and 6).

Why underweight is a risk factor for health consequences?

Malnutrition delays body growth and development, maturation being slowed down by average of 2 years (Dreisen, Spirakis and Stone). The stunted growth and immaturity represent a risk for the pregnant teenagers, because a low stature usually corresponds to a narrow pelvis, increasing the risk of a long travail. The backward growth and maturation determined by malnutrition create discrepancies between biological and chronological age. A double risk of low weight at birth or premature birth was observed in mothers who give birth for the first time between 13 and 17 years, along with an increased morbidity and mortality rate among them and the newborns as well.

From a social viewpoint, we enter in a vicious circle, early pregnancy increasing poverty of low-income women, because its association with the family enlargement. At the same time, teenager mothers tend to give birth to mature teenager mothers, creating a situation that perpetuates poverty. School dropout is a considerable risk in these cases.

Read suggested that malnutrition in mother prior to pregnancy, many years before or during lifetime, may have a significant influence upon fetal development and upon the health status of the newborns, both in present and during generations.

Malnutrition is a common problem in HIV infection and one of the health complications generated by AIDS (it decreases body immunity).

Malnutrition reduces labour capacity and physical resistance, affects quality of muscle fibres, and modifies proportion between fast and slow contractible fibres.

Underweight is mainly a consequence of former and present malnutrition.

Malnutrition in intrauterine life and childhood may be due to low energetic reserves of the human body, a consequence of physiological immaturity of premature pregnant teenagers (under the age of 18 years, when the growing process in mother isn't finished, a fact that exposes mother and child to the risk of a potential competition for energy and nutrition.

When the conception product, the newborn, comes into the world with an accentuated underweight, there are huge chances for it to continue this insufficiency during childhood (with all the pathological consequences – stunted growth, growth retard) and adolescence (when the maturation process may be delayed).

The more underfed mother is, the more immature is for her age and the risk at birth increases.

Malnutrition hinders dental development, adult osteoporosis being the consequence of calcium malnutrition; iron malnutrition leads to anemia.

In 2004, we studied BMI variability in children and adolescents aged 11–18 years using the percentile method and we recorded an underweight prevalence between 5.07% and 5.96% in the boys' series and between 5.07% and 5.75% in the girls' series (BMI <16.00)

Severe malnutrition may be generated by nutritional deprivation due to poverty and starvation, but also by adopting an inadequate nutrition behavior under the influence of some

cultural models regarding the ideal body mass. In this context, the high prevalence of underweight among the generation of the year 1998 is an expression of its receptivity to the fashion trends that promote an extremely thin body, maintained only through a nutritional behavior dominated by malnutrition. Not being aware of the dangers to which they expose themselves, adolescents adopt potentially pathogenic body models and this way socio-cultural factors become biological risk factors for their health.

If the situation we met among the adolescents aged 17–24 years, within the secular trend research on underweight we undertaken in 1980 and 1980, was due to nutritional deprivation of adolescents living in poverty, then we would observe the same thing in the adult population that we studied.

In 1980, the underweight prevalence was 1.32% in the male series and 2.48% in the female series. In the urban area the underweight prevalence was 1.22% in the male series and 2.23% in the female series, while in the rural area the underweight prevalence was 1.30% in the male series and 1.71% in the female series.

In 2004, the underweight prevalence was placed between 4 and 6% in the male and female series as well.

Analysis of the underweight prevalence by the main historical provinces indicates the following variability: in *Banat*, it reaches 2.03% in the male series and 2.63% in the female series; in *Transylvania*, it reaches 3.10% in the male series and 4.53% in the female series; in *Dobruja*, it reaches 0.17% in the male series and 1.03% in the female series; in *Moldavia*, it reaches 0.70% in the male series and 2.37% in the female series.

If we admit that underweight is the cause of past and present malnutrition, our data do not support this claim.

In addition, if we analyze the variability of overweight and obesity during 1980–2004, we find out an increasing frequency in population, from 39.12% to almost 60% in the male series, and from 32.4% to 42% in the female series.

Our paper represents a contribution to the precocious diagnosis of the deviations in the growth and development of children and adolescents, and a model of interpretation for the causal chain in which, in the absence of an institutional education, the socio-cultural factors may become biological risk factors for their health.

A strong argument for investment in the adolescent health is that 40% of deaths in the developing countries and 70–80% of deaths in the industrialized countries are assigned to behaviors, and attitudes accustomed during adolescence.

Data on malnutrition prevalence among children and teenagers will constitute the basis not only of national politics and programmes of monitoring and management but of community politics of promotion, prevention and intervention in the health area.

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