



ВСЕМИРНАЯ ОРГАНИЗАЦИЯ ЗДРАВООХРАНЕНИЯ
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BIOLOGICAL CHARACTERISTICS AND PROBLEMS OF SCHOOLCHILDREN AND ADOLESCENTS

by

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Introduction

The aim of this paper is to summarize the main points considered by the three working groups whose reports form the background documents for this meeting. It is not intended to discuss points which are generally well known, nor is an attempt made to describe possible solutions to problems posed by biological factors. According to the programme of the conference this paper will be concerned with children from five years of age upwards and adolescents.

Growth and development

Rapid physical growth of the age-group under consideration is accompanied by marked morphological changes that occur in all organs and systems. Onset of puberty (mostly between the ages of 10 and 13) is accompanied by a growth spurt (acceleration of growth and change in shape of the body), gonadal growth and development, development of secondary sexual characteristics, changes in body composition and growth (and maturation) of cardiovascular, respiratory and muscular systems leading to increased strength and efficiency of body energy production. Physical growth is accompanied by mental and psychosocial development.

Height, rather than weight, should be used in measuring the spurt in growth since it is not affected so much by small variations in nutrition or recent illnesses. The spurt, however, often starts with the acceleration of growth of fatty tissues leading to a temporary "rounding out" of body contours, followed by accelerated growth of bones (producing often a typical "lean" body shape) and finally by muscular growth giving the body an "adult" shape.

It is a most essential fact that the growth spurt as well as the onset of puberty are influenced by genetic and environmental factors. Since adolescent growth and development are stimulated and guided by a complex set of endocrine processes, the development of the latter during intrauterine life may be of importance. Similarly, malnutrition or other untoward influences in early life may crucially influence growth characteristics in adolescents.

Norms of growth will vary between different regions, countries and even between socio-economic groups in one area. It is imperative, therefore, to establish national norms which should be reviewed periodically.

Sexual maturation usually starts earlier in girls than in boys. Thus, in Europe 11-13 year-old girls are usually taller and heavier than boys of the same age. During a certain age period it also causes profound behavioural differences between sexes at the same chronological age. The growth spurt, however, lasts longer in males, so that about 5% of them continue to grow after the age of 18.

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The age of onset of sexual maturation has been decreasing in most countries of the European Region over the last 100-150 years. It is accompanied by a trend towards greater ultimate adult size. However, poor social conditions and malnutrition in some developing areas of the Region lead to retarded growth and retarded onset of puberty.

Though many aspects of acceleration remain obscure, such factors as better nutrition, better social conditions and urbanization are among those considered to be the most important. Acceleration of physical growth is not always accompanied by functional maturation of vital body organs, nor is it often accompanied by accelerated psychological and social maturation. The consequences of such disproportionate development deserve to be seriously studied.

The great individual biological variability in the pattern of growth and of pubertal change can have profound psychological effects on the adolescent in whom the onset of puberty is too early or too late in relation to his or her class-mates. The reaction to the profound biological changes of adolescence on the part of adolescents, parents, teachers and the community at large has an important impact on the overall development of young persons. Inappropriate reactions to variations in biological growth and development can be substantially reduced by the appropriate education of all concerned.

Another conclusion is that adolescents (in particular in the 14-18-year age-group) should be increasingly judged not just by chronological age but by their biological age, i.e. maturity; it is especially important in services for adolescents (education, vocational, social, medical) setting requirements for physical activity (sport, working patterns).

Mortality

The age-group under review has the lowest mortality rate of all age-groups showing a converging trend towards a threshold of about 40 per 100 000. The decrease in mortality rates has been more marked in countries of the Region where the overall decrease of mortality in recent years has been connected with progress to control infectious diseases. In the rest of the Region, where the threshold had already been reached before, no decrease in mortality rates has been noted, since there was no appreciable decrease in the death rate from accidents and neoplasms, which represent the major causes of death in this age-group. Available statistics for countries of the European Region show that accidents account for 35.3% - 64.3% of all deaths in the age-group 10-19 years (data for 1973). The corresponding figures for neoplasms are 5.5% - 13.8% compared with 0.6% - 8.6% for respiratory and 1% - 6.5% for cardiac conditions. A considerable percentage of deaths in the 10-19 age-group is due to suicide, reaching 10% - 15% of all deaths in this age-group in some countries.^a It should be pointed out that, as in infancy, the death rate of adolescent males is higher than that of females.

Morbidity

Very little data on the morbidity pattern exists, and it has been suggested that more information should be collected. Obesity, mental retardation, convulsive disorders and chronic respiratory disease are among the most frequent and serious conditions mentioned. Psychosomatic disorders, as well as disorders of adaptation, often escape recognition by physicians and are diagnosed as purely somatic disease. Some diseases, such as acne vulgaris, though considered minor, are of particular importance to many adolescents.

Accidents

It is well known that morbidity connected with accidents greatly exceeds mortality from this cause; some statistics indicate that for each fatal accident there are at least 10 cases of serious injuries requiring hospitalization for over 30 days and 1 resulting in permanent disability. While fatal accidents are mainly connected with traffic, non-fatal accidents have a different pattern. Sports injuries represent the most frequent cause, but industrial accidents also play a substantial role. Several solutions have been suggested to this difficult problem,

^a WHO Technical Report Series, No. 609, 1977 (Health needs of adolescents: report of a WHO Expert Committee).

both with regard to control of sources of accidents in the environment (transport, machines, tools) control of access to these services (by city planning, better training preceding the use of means of transport and dangerous tools), and identification of "risk-takers", users of psychotropic agents and individuals with dangerous levels of stress.

Nutrition

Food and eating are so strongly influenced by psychosocial factors (customs, beliefs, habits and child-rearing patterns) that the field of nutrition is filled with innumerable misconceptions, misunderstandings, inconsistencies, false beliefs and, in many instances, with sheer nonsense. The situation in developed countries is aggravated by the fact that, in the absence of serious malnutrition, assessment of nutritional status becomes uncertain.

In developing areas of the Region cases of severe and moderate under-nutrition do exist. In developed areas nutritional risk is associated both with socioeconomic status and with cultural, historical, religious and emotional factors. Family incomes correlate much less than social status and other factors with levels of nutrition (income limits healthy diet only in cases of extreme poverty). It should be remembered that the period of intensive growth in puberty has higher nutritional requirements, as is the case in the prenatal period and in infancy.

Nutritional risks in industrialized societies are connected with the increased use of pre-processed and so-called convenience foods (in lieu of usually more balanced diets of family cooking), and with collective meals, which, though they may be wholesome, do not take into account the dietary habits of the family and the quantity and quality of food consumed at home. The involvement of parents in the management of school canteens may help to maintain balanced nutrition for their children.

Obesity and overweight is a prevalent form of malnutrition in developed areas. In many instances it is caused by increased dietary intake, but the interaction of constitutional, hormonal and psychological factors is so substantial that in most cases it precludes simple approaches through dietary restrictions. Equally difficult problems are posed by underweight in adolescents not directly connected with insufficiency of food; anorexia nervosa, and "slimming" with or without anorexigens, may also be mentioned in this connexion.

Chronic diseases

Chronic diseases present a special problem in this age-group because of their potential influence on the growth and development of individuals. Delayed growth and/or sexual maturation which has been described in many chronic diseases requires careful assessment and appropriate psychological and educational measures so that the child is helped to develop a healthy self-image. Helping chronically ill children to understand how their disease will affect their physical development is one of the most important ways of contributing to their normal psychological development. It has been repeatedly stressed that chronically ill children should to the maximum extent possible be placed in a normal environment so as to be able to meet their peers and to feel part of a "healthy" group.

The development of sexuality in an individual involves biological, social and psychological factors. The development of gender identity (i.e. awareness of being a boy or a girl) and sex roles (i.e. appropriate behaviour) normally takes place in early childhood. At puberty biological changes, described above, are accompanied by profound psychological changes, which in a given sociocultural environment give rise to an increase in sexual interest and sexual behaviour; some of their manifestations, such as masturbation, which were for a long time considered deviant, are normal if they do not replace other forms of sexual behaviour. In the development of sexual preferences in early adolescence close relationships form between individuals of the same sex, including sometimes explicit homosexual behaviour, which however does not persist into later years. Normally, in the age period 14 to 18 years heterosexual preferences develop, but, notwithstanding its biological basis, the form of courtship, time of the start of sexual life, its form and intensity are primarily influenced by the social environment - family, community, society and culture.

The lowering of the age of puberty is accompanied by a lowering of the age when sexual intercourse begins; this phenomenon, however, is highly dependent on the above-mentioned factors; while this has been proved for some countries, for others it should be considered rather as a tendency. An earlier age of sexual activity in many instances produces a gap between biological and psychological (including emotional) preparedness and this may have a detrimental effect on the future development of the human elements of sexual life.

The earlier start of sexual activity poses serious problems with regard to contraception, both concerning types of contraception suitable for teenagers, and with regard to the need to impart appropriate knowledge.

The dramatic increase in adolescent pregnancies, noted in at least some countries of the Region, reflects the inadequacies in this field. It is well known that pregnancies in females aged less than 17 years constitute a risk factor both for the baby (increased foetal and infant mortality, malformations) and for the mother (increased rate of toxæmia, hæmorrhage, maternal mortality). Social and psychological consequences of early pregnancies (early school leaving, early unstable marriages, single parenthood) are of equal importance. Pregnant adolescents increasingly resort to abortions, the number of which is steadily increasing.

Early sexuality is accompanied by an increase (in many countries a dramatic one) in sexually transmitted diseases among teenagers. The rate of this increase is dependent on socioeconomic, cultural and psychological factors and differs from country to country. Ignorance among teenagers of the nature, prevalence and mode of transmission of these diseases and their reluctance to seek medical advice are important factors which are apparently amenable to educational influences.

Conclusions

A review of some of the biological characteristics of the 5-18-year age-group shows that we face not only old problems, which were already well known, but many new ones, originating in the life-styles of modern societies. It is therefore imperative when considering the scope and nature of services for this age-group and planning corrective measures to take into account both these facets. Most of the countries of the Region have established services and approaches which have proved to be extremely effective in the past. These activities, however valuable, should undergo periodic adjustment to take into account both the decrease in magnitude of traditional, familiar problems and the appearance of new ones which call for new ideas and approaches.