

GROWTH AND DEVELOPMENT AS A BASIS OF SOCIAL PEDIATRICS

by J. C. VAN WIERINGEN

University Children's Hospital "Het Wilhelmina Kinderziekenhuis" Utrecht,
The Netherlands

Abstract: Social pediatric consultation consists of biometry (growth and neuro-motoric and physical development), physical examination and mental observation in order to detect (hidden) pathology and disorders, exploration of the functioning (behaviour, play, learning, sports) of the child at home, at school, and in other social settings, and the early recognition of threats of health (individual and environmental risk factors). The main parameters for a general medical assessment of growth and physical development are height attained, weight for height, in the case of infants and pre-school children neuro-motoric development, and in the case of adolescents the stages of secondary sex characters.

Key words: social pediatrics, growth, neuromotoric development, physical development.

Medical activities concerning the status of health of children may be distinguished into two complementary systems:

curative medicine (cure) as performed by the general practitioner, the pediatrician and other clinical specialists, and the paramedical professionals like the logopedist and the physio-therapist,

social pediatrics (preventive medicine, care) as performed in

- maternity care for the healthy new-born, hospitalized or at home,
- health clinics for infants and pre-school children,
- school health,
- adolescent health care ("pre-prenatal").

Between these two fields of pediatrics mutual influences exist. The following examples may be given:

— medical experience and science as developed in the clinical, curative situation are the sources of the methods which are applicated in social pediatrics. Some of these methods have to be modified and adapted to the possibilities and limitations of the extra-mural practice, that is to the situation in rather modestly equipped clinics and schools. Examples of adapted methods are peak flow-metry, screening-audiometry, the method of measuring body-height (without traction) and the observation of those items concerning the psycho-motor development of infants, which are suitable to be examined and judged in the infant health clinics,

— on medical indications a number of individual children visiting health clinics or the school-doctor, will be referred to clinical specialists. But this forms only part of the interest of social pediatrics for the curative sector. For in particular the epidemiological approach of social pediatrics, and the results thereof, are of importance for the clinical pediatric practice. Epidemi-

ology is the study of collective phenomena and their determinants concerning health, morbidity, and mortality of a population.

Descriptive statistics, *analytic* studies of the relationship between environmental factors and the parameters of health and disease, and *experimental* epidemiology, including the controlled introduction of mass-vaccination programmes, have made available a.o. reference data of growth and development, have provided insight into priorities in curative medicine, and have changed sorts and conditions of the patients attending children's hospitals.

Not contradictory to these close interrelationships there are also remarkable differences between curative and preventive medicine. The first system is focussed on the individual, enters into the individual demand for help, and tries to treat a current disease, defect, or handicap. In the preventive sector the organization for social pediatrics takes the initiative by inviting

— in some countries by forcing — the child and its parents, or teachers, to visit the consultationroom. The medical history and the physical examination are focussed on needs, and less on demands, on threats of health, and on the interaction between health and the promoting or disturbing factors, respectively, in the environment.

In most industrialized countries child mortality has decreased considerably. For the greater part this is the result of improved living conditions like sufficient nutrition, modern sanitation and housing, extended education, better clothing, and the introduction of social facilities for everybody. In the nineteenth century infant and child mortality decreased almost without any improvement of medical treatment. We may assume, that in the twentieth century improved medical cure and care have become of positive influence as well. This is proven for the effects of vaccination programmes, and we think, but for the greater part without convincing proof, that health education and anticipatory guidance and counseling, as performed in child health, were of importance also. It is an established fact, that when nowadays children get a disease, by better treatment the seriousness is less, the duration is shorter and handicapping consequences are less frequent than before.

In 1900, when in the Netherlands the first child health clinics and school health services were founded, the main scope was the fight against infant and child mortality, later on followed by the emphasis on the fight against morbidity. Although these aspects have not disappeared, after the second world war the accent has gradually been shifted to the promotion and protection of health and development. Today, in prosperous countries, the parents who visit the doctors and nurses in social pediatrics are no longer primarily worried about the possibility that their children will die or will become seriously ill. Nowadays they respond to the invitation of the organization because they are interested in and feel the responsibility for the health of their children. As today it is in general no longer a matter of life and death, the implicit question of the parents is rather "Is my child healthy, as healthy as possible"? If this question of the parents is held as justified, and moreover is considered to be a question in the medico-biological sphere, it will be the medical profession, in particular the social pediatrician, who has to react upon it.

No answer and advice without examination, no synthesis without a preceding analysis! In the case of the individual child, the analysis is built up by the periodically performed medical examinations. The content of these contacts includes:

— a medical and psycho-social history (anamnesis) focussed on medical risk factors in the child itself and its relatives, on threats in the domestic circle, and on the functioning and the behaviour of the child at home, at school and in clubs and sports;

— the opportunity for the parents, the child itself, and the teachers to ask attention for complaints or worries;

— a medical examination on pathological disorders. Often these disorders are hidden. However, sometimes the parents are aware of it, but do not consider it as serious enough to consult the general practitioner;

— assessment of growth, development, and as far as adolescents are concerned, the stages of sexual maturation. The longitudinal biological observation of growth and development is indispensable for the medical judgement of the status of health of children and adolescents;

— the medical consultation, with its aspects of counseling and advice, forms the synthesis. If necessary, consult together with other care-givers may follow or the child may be referred to the general practitioner or the medical specialist.

It should be considered as a misunderstanding to think that only the indications for individual advice, consultation and referral form the profit of the periodical contact. Another important aspect of the output of social pediatrics is the assurance — in most cases — that the child has no (hidden) pathology, that it is growing and developing well, and that no serious menace of health is discovered. Evaluation of the outcome should also look at other purposes like the contributions to the work of other disciplines working for children, and the epidemiological description of the status of health of children and adolescents as based on the processing of collected individual data.

Needless to say that it is impossible to give an answer to the parents with a hundred per cent certainty, or an answer that remains in force for an unlimited period. So the consultations have to be repeated. For practical reasons, and partly based on knowledge about growth and development and about risks to health, the frequency of the periodically performed medical examinations decrease with age: monthly at infancy, twice per year at pre-school age, annually and later on once per two or three years at school age and at adolescence.

In the Netherlands the medical records in social pediatrics are established according to the main lines mentioned: they provide a longitudinal observation by means of adequate registration of the periodical examinations, notes about the history of the child itself and its relatives, about housing, information from the school, and growth and development visualized in a diagram. A summary has to be made of every consult, including the items of health education, specific advice and eventual referral. On a voluntary basis two types of medical records are almost nation-wide used: the one by the health clinics, and the other by the school health services, respectively (copies with a translation in English will be sent by request). The content and the lay-out of both charts are linked in order to achieve an integrated longitudinal picture of each individual's medical history, observations and examinations, anthropometrical data, consultations, and vaccinations.

So far in brief the underlying thoughts and the main lines of social pediatrics in developed countries. Though emphasis and details may differ according to the age-group concerned, the global scope of social pediatrics as presented

here, covers the whole of the group of young people from zero to twenty years of age.

More detailed attention may be drawn to the two subjects growth and development in the framework of our medical judgement of the status of health either of the individual child, or of young people as a sub-population.

The health status itself of a population can not be measured directly, but only indirectly. Morbidity and mortality are the indirect impression of the health status: the lower the rates of morbidity and mortality, the better the general status of health. The secular shift of the growth and maturation pattern of a specified population forms a "direct print" of the health status: it has often been observed that an increase of stature at a given age, an increase of adult height which is reached at an earlier age, and an earlier maturation, follow closely an improvement of the living conditions and coincide with decreasing morbidity and mortality rates. For several populations in history also the combination of opposite changes has been described. A concurrent existing difference in height between subpopulations may be considered as an indicator of differences in the status of health, but, since genetically determined differences are sometimes very difficult to exclude, prudence and reservation are recommended.

Very illustrative is the concurrent difference in the heights of conscripts hailing from Northern and Southern provinces of the Netherlands. "Everybody" in the Netherlands knows that people in the Northern area are taller than in the Southern. But historical data on statures of conscripts made clear that half-way the nineteenth century there were no such differences in height. In the second half of the nineteenth century these differences generated parallel to divergent courses of marital fertility and child mortality, while since the first world war the differences have been diminishing gradually (VAN WIERINGEN 1979).

In the Netherlands the secular shift of height and maturation is going on, according to the still steadily increasing heights of conscripts and the preliminary results of the third nation-wide biometric survey in 1980. The interpretation of the secular shift of the last century as a positive health indicator was quite reasonable, and perhaps this interpretation will be correct also for the recent situation. But some reserve is recommended. For one is inclined to wonder if a shift in the very low infant mortality from 8 per 1000 to 7 per 1000 still may be considered as an indicator of an improving general status of health of the population, or even of this particular age-group. And concerning the positive secular shift during the last decade one may ask oneself if this phenomenon is rather a "hurry after" than the expression of a still every year improving status of health.

One of the reasons for periodically performed cross-sectional surveys of growth and maturation is to make available up-to-date reference data for practical use in curative and preventive medicine. Concerning a growth diagram the reference data of choice are attained height, weight for height, and the median ages of sex characteristics like menarche, pubic hair, breast development and genitals (Fig. 1). The preparation of weight for height standards requires a rather big sample, but when there is the opportunity to carry out a nation-wide survey of growth of all age-groups between birth and adulthood, extension of the number of individuals in the sample is rather easy (VAN WIERINGEN 1973).

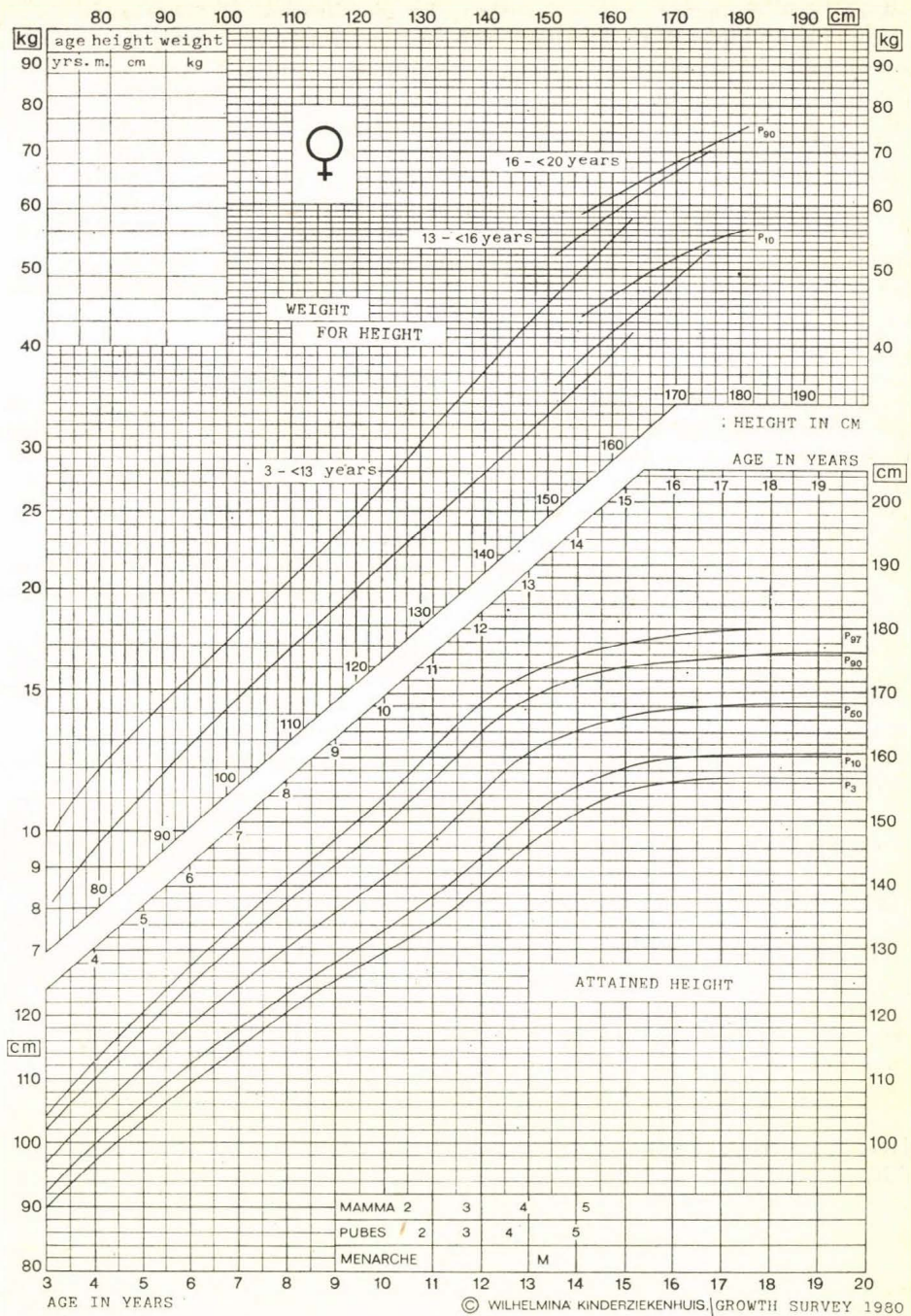


Fig. 1. Growth Diagram: girls 3-20 years of age, the Netherlands, 1965

A child is expected to grow within the distribution of the standards for height and weight and to develop within the age-limits of developmental items as found for the population it belongs to. Tabulated results of repeated measures of a child's height and weight, including the age of examination, are not suitable to give an impression of its growth. Regularity, velocity, unexpected deviations, maintenance of the own "growth canal" may be judged only on the basis of visualized data in a growth diagram. Therefore, a growth chart forms an essential part of every medical record for children, in the hospital as well as in the maternal and child health center or in the school health service. Drawing a curve in a two-dimensional grid is rather difficult and must always be checked, also when the doctor him/herself has plotted the figures in the diagram.

The medical profession has the task to integrate knowledge of growth and development into the clinical and social pediatric work, in favour of sick and healthy children. But growth and development data are only part of the medical examination and can never take the place of it. The standard values of the growth diagram represent what is usual at a given time and for a particular population. So they represent what may be acceptable, not what is normal or optimal. Extreme individual values are not by definition unacceptable or pathological, but may indicate the need for a clinical examination. Needless to say that not all pathological disorders are attended with stunted growth, and a child with stunted growth may even remain above the curve of minus twice the standard deviation.

Indications for further medical examination as based on the individual growth curves are:

- unexpected deviation from the course of the standard-curves,
- a curve at about minus three times the standard deviation,
- a curve which gradually bends downwards, in particular after perinatal troubles,
- a deviated course in combination with symptoms like abnormal stools, neurological symptoms, urinary tract infections, or when medicines are used,
- a course that is much lower than expected considering the mid-parent height, or the height of siblings.

In particular in social pediatrics one is aware that world-wide spoken, nearly all children with stunted growth are victims of under- and malnutrition. Sometimes the expression "adaptation" is used for the idea that the small statures of indigent populations should be a wise reaction of nature. But the term adaptation is misleading. The commission to the developed world is to prove that starving children are not being helped by the description of their situation as being adapted to. They only will be saved when we succeed in giving them the food that is already available, but we fail to distribute to the places (countries, regions, districts, towns and villages) where there is shortage of it.

REFERENCES

- WIERINGEN, J. C. VAN (1973): Lengte en gewicht van kinderen. — *Maandschrift Kinder-geneeskunde* 41; 69—80.
- (1979): Secular growth changes and environment, an analysis of developments in the Netherlands, 1850—1978. — *Coll. Anthropol.* 3; 35—47.

Author's address: DR. J. C. VAN WIERINGEN
University Children's Hospital
"Het Wilhelmina Kinderziekenhuis"
Nieuwe Gracht 137
3512 LK Utrecht
The Netherlands

