

CONTRIBUTION TO THE GENESIS OF OBESITY FROM THE ASPECT OF EXERCISE AND NUTRITION DURING GROWTH AND DEVELOPMENT

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Abstract. The parental influence on the physical and mental development of their children can be positive as well as negative. While, apart from the choice of partner, parents cannot influence the set of genes they impart to the next generation, they do have an influence on the positive development of their children by creating favourable ecological conditions the quality of which increases with education and with the recognition and development of the child's talents. Love and care alone without the necessary education may have a negative effect (rise of obesity, etc.). Education of the parents acts as a positive factor on the child's mean height, it has a positive correlation with the per capita income in the family, with the number of inhabitants in the place of living, and a negative correlation with the number of children in the family.

A series of examples of favourable and undesirable impact of family on the child's physical development, given in the paper, were derived from a longitudinal follow-up from birth to maturity of a group of 300 Prague children.

Key words: genesis of obesity, exercise, nutrition, growth and development, Prague children.

Introduction

Essentially the influence of the parents on the physical and mental development of their children is twofold. On the one hand, they pass on a set of hereditary characteristics and endowments in the form of genome and, on the other hand, they create the ecological conditions in which the child is reared, protect it from adverse factors, ensure adequate stimuli for its physical and mental development, select the child's activities and support those which promote its talent best. Whereas in the first case the active part of parents is manifested only in the choice of the partner, in the second case the influence of parents (and of grandparents) is absolute within the given social conditions. The role of parenthood, as outlined above, clearly indicates the need for judgment and knowledge which under normal conditions parents can acquire only by active preparation. Grandparents, too, exercise a considerable influence on the development of children.

The author do not mean to go into details and to solve the problem in its entirety. He merely wishes to draw attention to the responsible tasks of parents for the child's healthy development and for its later role in social life.

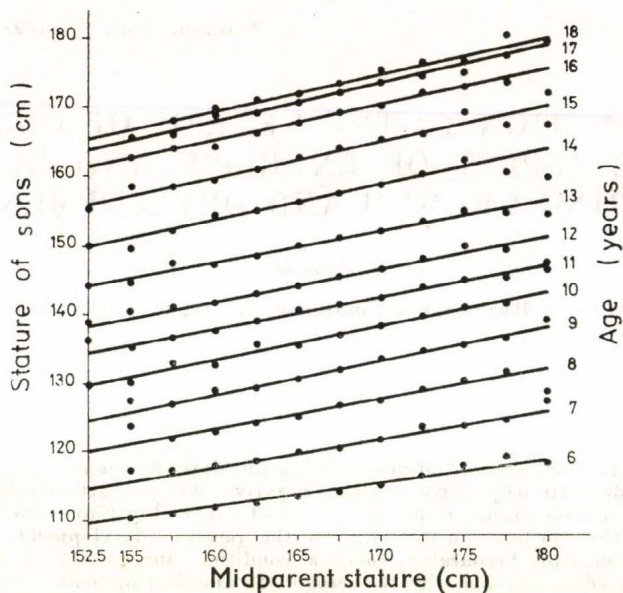


Fig. 1: Relations of the mean height of parents to the son's height at the age of 6 to 18 years (Orig. M. PROKOPEC)

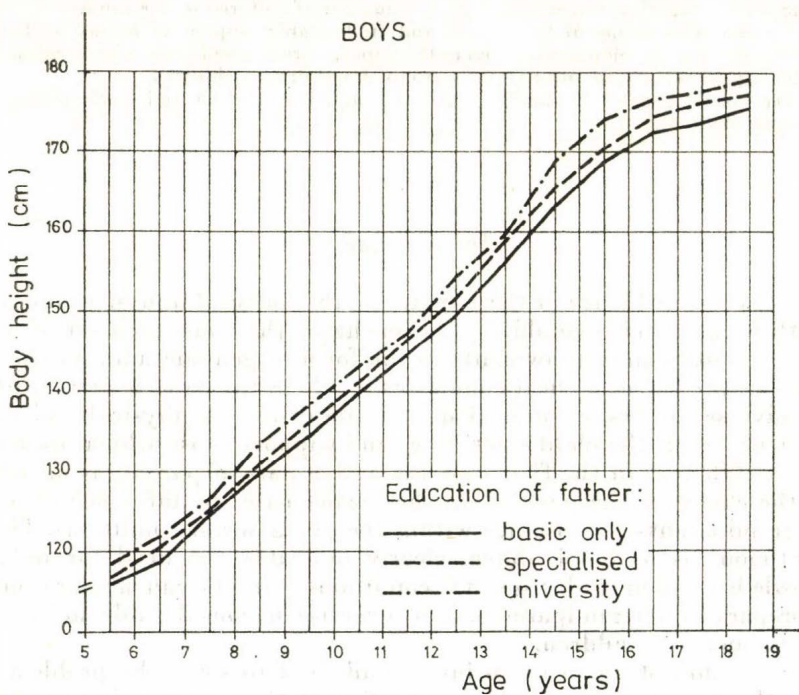


Fig. 2: Height of boys according to the degree of the father's education (PROKOPEC et al. 1979)

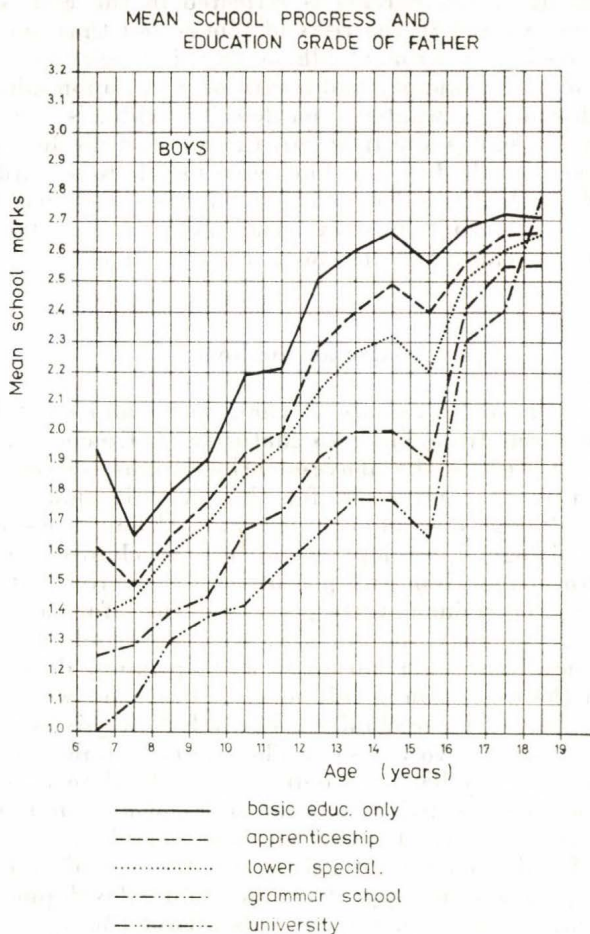


Fig. 3: School marks of the boys according to the father's education (PROKOPEC et al. 1979)

The ecological influence of parents rests on securing healthy living, feeding, regimen of day, on a systematic development of mental faculties and positive character traits.

At the analysis of the results of three nation-wide investigations of youth in Czechoslovakia (PROKOPEC et al. 1979) there repeatedly was found a positive correlation between the parents' education level and the body height of their children. There was a positive relation between the parents' and children's body height. If we added the school marks to these characteristics, we found a significant correlation between the degree of the parents' education and the school reports of the children, especially in elementary schools. The circle was closed if to the parents' education, to their mean height a higher income per head in the family, a greater number of citizens in the place of living, a smaller number of children in the family and a lower order of the child's birth in the family were added (Figures 1, 2, 3).

The enlightenment of the parents is reflected in the child's development insofar as it is less exposed to the risks of illness and that, on the whole, its living conditions are better. From childhood on it is taught hygienic principles, care is bestowed upon the quality and length of sleep, upon adequate clothing and upon the adequacy of whatever burden. The child is taught endurance, a positive attitude to sports and fresh air, the onset of an illness is recognised in time and the doctor called in. The food corresponds to scientific knowledge, to the child's age and physical exertion; a higher salary usually associated with higher education permits healthy living and a stimulating environment. Obviously the above characteristics do not apply in every case.

Analyzing methods

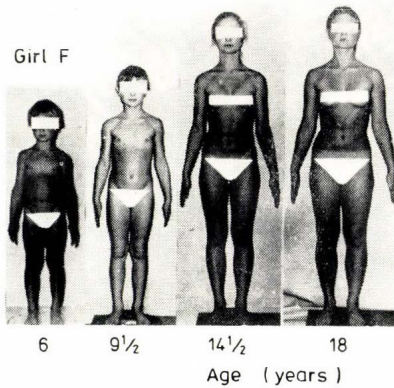
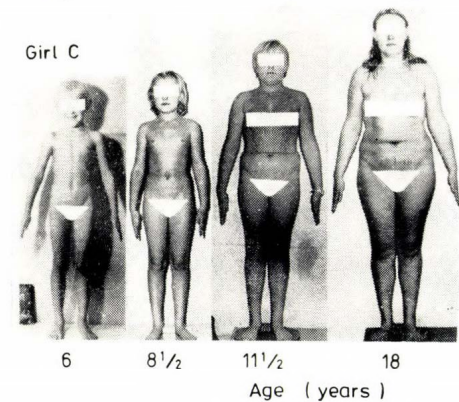
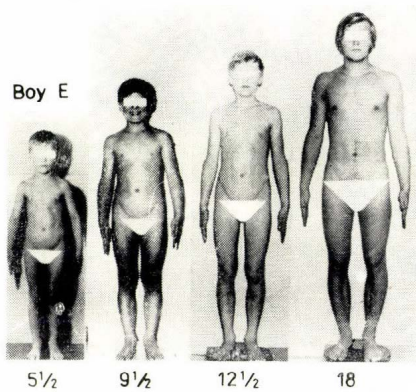
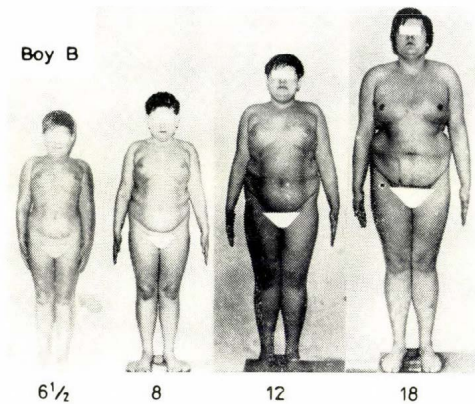
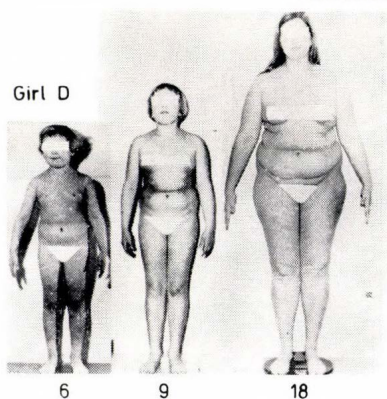
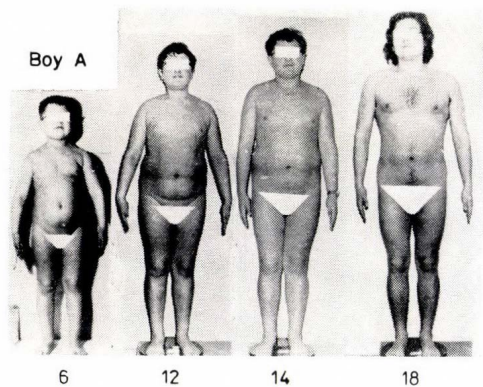
In 1956 we started our first study on the somatic and mental development of a group of children from birth to maturity in Czechoslovakia (KAPLAN et al. 1969). In contrast to the above-mentioned cross-sectional studies performed always at 10 year intervals, for this investigation we selected 300 children from the Prague district 3 at random. Although we were primarily interested in the biological development of healthy children, in the course of years of systematic cooperation with parents, we discovered that it was possible, for investigators to determine in retrospect, from the information accumulated in the field of morphology, psychology, sociology and the child's health status, the preconditions for a harmonic and optimum development of the individual. With the exception of advisory medical care we did not interfere with the development of these children. The oldest in this investigated group is now 23, and the youngest 18 years old. The original number of the individuals followed up systematically has been reduced to 180. Almost 30 of these bring along their own children, starting thus the study of a second generation.

The results of the two investigation methods complement each other. The influence of the family is most intensive until the age of three years. After the child's entry to school its impact on the child's development reduces the influence of parents. From puberty onwards (about the age of 12 years) the influence of children collectives, out-of-school and out-of-family influences (reading, cinema, television, theatre, chance acquaintances, sports and persons in the neighbourhood) gain the upperhand. However, parents should still retain control of these influences, their analysis and guidance.

Results: Case studies

We shall show on a few examples the positive and unconsciously negative effect of parental care on the somatic development of their children. In a similar way parents can influence the psychic development of the child and its future life.

(1) The boy A had a visual defect from birth which led to lesser motor activity. Due to the exaggerated parental care the boy developed overweight which probably would have increased if he had not been isolated from this influence by entering a school for trainees. There he joined a group going in for



yoga and in the course of three years he corrected his somatotype through exercise and an adequate diet (Plate I, A).

(2) The unconsciously negative effect of parents (in the form of exaggerated care and excessive feeding) manifested itself in the boy B who at the age of 3 years showed no signs of obesity. Continual overfeeding together with a greater appetite and only little exercise contributed to the syndrome of obesity. Parental influence was not interrupted, and at the age of 19 years B is still obese trying hard to lose weight (Plate I, B).

(3) At the age of 6 years the girl C was tall for her age with adequate proportions and with rather an inclination to slimness. At the age of 8 she started to gain in weight, from the age of 11 she was overweight in relation to age and height. At the age of 22 years she has already 3 children (Plate I, C).

(4) The girl D due to excessive feeding (too much care in the family, especially on the part of the grandmother) was already at the age of 6 years overweight, being tall for her age. In the given environment she could not cope with her growing obesity, especially since her parents made her choose the vocation of cook because of her preference for cooking and food. Only when she met her boyfriend did she make a great effort to reduce weight. In this she succeeded with the help of clinical care. Today she is married and has one child (Plate I, D).

(5) A positive influence was exercised by parents on the somatic development of the boy E by evoking and supporting his interest in sports (swimming, water polo). His physical condition and discipline serve him well in his present occupation. He is married with one child (Plate I, E).

(6) The parents of the girl F (father an active sportsman) encouraged from the earliest childhood a love for exercise. This interest led her to professional dancing, representing her country also abroad (Plate I, F).

One cannot perform experiments on humans. The development of the individual cannot be repeated. Neither is it possible to separate the number of influences affecting it. Nonetheless, the above examples have demonstrated the purposeful influence of parents in the case of the talented girl and on her career, and the uncritical attitude of parents to motor activities and nourishment of their children with a tendency to obesity. In cases 1 to 4 a tendency to overweight is in the family. GARN et al. (1978) and also others have shown that life in a family where the parents are overweight creates the risk of obesity in children (even in adopted children and other members living in the family).

Before World War II obesity was to a certain degree a sign of prosperity and of a good social position in Czechoslovakia. The farmer had to be fatter than the farmhand, the factory owner or foreman fatter than the worker. Today, when every workman can overeat if he wants to at least with staple food, and when the harm of excessive overweight is generally known, obesity is rather a manifestation of lack of dietary discipline and aversion to physical exercise. In contrast, adequate slimness based on a correct diet (proper composition, rich in protective substances, etc.) and elasticity are the signs of intelligence. This holds not only for parents but also for the children.

Conclusion

The parents' influence to the somatic and mental development of their child may be positive as well as negative. Whereas, apart from the choice of partner, the parents cannot influence the set of genes passed on to the next generation, they can exert an influence on the positive development of their child by creating adequate ecological conditions, the quality of which increases with education and by recognizing and developing the child's skill. Love and care alone, without concomitant enlightenment, may also have a negative effect (obesity, etc.). The education of the parents acts as a positive factor on the child's mean height, it positively correlates with per capita income in the family, with the number of citizens in the living place and has a negative relation to the number of children in the family.

Science can furnish concrete information for the required rearing of children. Introduction of this knowledge into practice is no less important than scientific investigation itself.

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