Children with Adult Hearts

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The pace of the world has accelerated. Over the past 200 years, what once was a civilization centered primarily in the household economy, governed by the pace of the natural growth of animals and plants, became a frantic and globalized world, where there is no time for considering or following an organic pace.

Our children and grandchildren were born in this information-loaded world. They are intimate with the Internet, remote controls and various types of electronic games, and we even feel a twinge of jealousy of their familiarity in dealing with all these stimuli. At the same time, we are relieved and proud to see that they look more suited to this new reality than we are. By analogy with technology, they seem to be "new versions of human beings"—more intelligent, versatile, adaptable and resistant to such a load of information.

Is this, however, the best legacy we can leave them, who, after all, are human beings governed by a genetic material that adapts more slowly than their brilliant minds? Apparently not. As an example of this, we have the pandemic of obesity and its comorbidities, which seem to affect this new generation earlier and more seriously, as discussed in the study entitled "Variability in heart rate, lipids and physical capacity of obese and nonobese children"[1]. Similarly, we have problems that previously were not even contemplated during childhood, such as those related to the high yield hearts of athletes, as discussed in the study entitled "Competitive Sport in children and adolescents: should pre-participation examination, and electrocardiogram be required?" In order to prepare our offspring for an increasingly competitive world—or to raise gifted athletes, perhaps in an attempt to make our own childhood dreams come true—we accelerate the aging of their cardiovascular system.

It is believed that this will be the first generation in history to fail to outlive its parent generation[2], and there is a global concern with the probable burden on health systems in coming decades, if no control of cardiovascular risks is achieved at population level.

Key Words

Lipids; Atherosclerosis; Disease Prevention; Risk Factors; Child; Adolescent.

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And what about Brazil? Is there an effective prevention policy at national level aiming at the cardiovascular protection of the whole family? There is an increasing number of government initiatives in this aspect, but they are still insufficient, considering the seriousness of the problem. There have been respectable and important isolated initiatives in the country, and excellent clinical and population studies in some regions[3-15], but all this has been far below what is needed.

We need a national diagnosis of the risk factors for chronic diseases among all age groups, the establishment of national criteria of normality for cardiovascular markers, and an effective policy that includes all Brazilians. We need interventions in families, schools, communities, and businesses, since health should really be considered a universal and inalienable right. We need programs that deal with human beings during their entire life cycles, with all their inherent biological limitations and weaknesses, which unfortunately we are not able to "turbo" or "update" as we would like to.

Cardiovascular prevention is not restricted to any age group. It should start before conception and continue throughout the whole life of the individual, and the process should be understood from an ecological perspective. At each stage of life, according to specific age characteristics, there is an opportunity for prevention. Some periods may be more critical than others in terms of lasting consequences as, for example, the fetal period, in which the metabolism is prepared to face changes in the external world, or childhood, in which health habits begin to form.

Cardiovascular risk factors have been known for more than half a century, and many control and treatment measures are now available. Clinical trials are often published in medical journals, showing significant reduction in cardiovascular morbidity and mortality with the use of antihypertensive, antiplatelet, and lipid-lowering drugs. And we have even developed sophisticated statistical resources to analyze combined studies involving thousands of patients by means of meta-analysis and systematic reviews. With all these resources it is possible to detect small-but significant-effects of drugs and surgical interventions. Therefore, ignorance is not the cause of the maintenance of cardiovascular diseases as the leading cause of death in most countries.

The proposal of an inflammatory atherosclerosis theory led to the formulation of more specific therapeutic approaches. The identification of infectious agents, or even the speculation about a natural selection of individuals who are more prone to complications of atherosclerosis, by bacteria or viruses, has been a promising possibility. However, in terms of results, little has been seen until now. The various treatments have had limited effects in clinical trials, achieving little or nothing to alter the epidemiological picture of cardiovascular disease. It is possible

that prevention has come too late for these patients. For them, treatment of complications could be more efficient to reduce morbidity and mortality. The clash between prevention and treatment of complications is an error, which often occurs when economic resources are limited. It is undeniable that prevention must begin very early, among women of childbearing age, to provide a healthy intrauterine environment for the fetus. We must remember, however, that prevention has its limitations, which include adherence, cost and need for adoption and maintenance of a healthy lifestyle in a society whose modus vivendi leads to obesity and a sedentary life.

This challenge requires new proposals. The battle has to be fought on two fronts. The preventive treatment should begin early, with the future mother and the children, and it should involve teaching, educating and recruiting partners for the control of risk factors. The children themselves are proving to be very effective partners in changing the behavior of their parents. In parallel - and contemporaneously - the search for new markers, new causal agents and new drugs can keep alight the hope of altering the natural history of this disease, as prevention has not been sufficiently effective.

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