

# Promoting the health of children and adults by primary school teacher

Volume 5 Issue 8 - 2016

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## Index

- I. Introduction
- II. Current health problems in developed countries: The diseases of civilization or Non-communicable diseases (NCD)
- III. Initiatives to prevent diseases of civilization and some objections to such initiatives
- IV. Origins and early manifestations of NCDs
- V. Prevention of NCDs from childhood: A rational approach to the problem and alternatives in promoting health adult since childhood
  - Pediatrician
  - School teacher
- VI. Last remarks

## Introduction

Infancy and childhood are the major heritage of mankind. Promote health and education of children is the best way to guarantee the future of any society. In order to reduce child mortality, combating diseases and promoting children's health, pediatrics emerged in the nineteenth century as a branch broken off from the green tree of medicine. As important for mankind is health and education of children that the United Nations General Assembly adopted, in 1959, the Declaration of the Rights of the Child, where health and education are the main components.

### Current health problems in developed countries: the diseases of civilization

In addition to the health children problems, medicine has been confronted since the second half of the twentieth century by new challenges arising in the heat of a changing world, to the point that the main current health problem in developed countries are the so-called Civilization diseases or Non-communicable diseases (NCDs, WHO). Some of them as atherosclerosis, cardiovascular disease, type 2 diabetes and neurodegenerative diseases emerge as authentic pandemics. As direct antecedents of the first three act overweight, obesity and hypertension. Other important conditions, in some way related to them, are several neoplasm of organs, such as lung, breast, stomach, colon, prostate, etc., osteoporosis and mental disorders.

They account for more than 60 % (36 million) on the global of 60 million deaths/year, and for about 10 million, premature deaths (< 60 yrs.). Death distribution according each group of NCDs range about 30 % for cardiovascular diseases, 13 % for cancer, 7 % chronic respiratory diseases, and 2% for diabetes.

The research on the roots of these diseases has established they have a multiple origin. Taking as an example the fundamental cause of death in developed countries, which are cardiovascular diseases, related to atherosclerosis, there is a wealth of data supporting that idea from extensive studies among which deserve to be remembered those conducted from the perspective of clinical epidemiology that began in 1948 with the Framingham study in a cohort of individuals of the American northeast. The follow-up of this study demonstrated that the major risk factors for cardiovascular diseases were elevated blood pressure, high blood cholesterol, smoking, obesity, diabetes and physical inactivity. This information was enriched in subsequent revaluations of the study with the results on the role of factors related to blood biochemical and psychological conditions of participants.

Subsequently in 1973, the Bogalusa longitudinal study included 1457 children between 5 and 14 years, followed during 15 years. This research proved that high blood pressure levels, high body mass index and hypercholesterolemia were the major cardiovascular risk factors.

### Initiatives to prevent diseases of civilization and some objections to such initiatives

The information provided on the subject in the second half of last century, led in the decades of the 80s and 90s great enthusiasm for the preventive aspects and generated a lot of programs, mainly from adult medical specialties, with questionable performances.

One of the successful exceptions was carried out in the region of North Karelia (Finland) that showed in the sixties the world's highest rate of deaths by coronary disease. The central premise of the North Karelia Project was to change the population lifestyle causing risk factors through community-based initiatives including preventive and information services. Instead of a series of specific vertical

programs for each disease, it was proposed an integrated approach towards the main factors of common behavioural risk. The project was a collaboration of several decision-making entities including the WHO, local and national health authorities, health experts, education professionals, the private sector and various NGOs. The Finnish experience helped in the design of the global strategy to prevent chronic diseases that WHO adopted in 2000 in which was stressed the need to combat comprehensively risk factors, especially the smoking, unhealthy diets and physical inactivity.

This global approach to prevent this epidemic was continued by WHO with a series of reports and resolutions among which the following in recent years: WHO. 2008-2013 Action Plan for the Global Strategy for the Prevention and Control of Non-communicable Diseases. Geneva, WHO, 2008. WHO. GENERAL ASSEMBLY. Resolution 64/265. Prevention and control of non-communicable diseases. 2010. WHO. First Global Ministerial Conference on Healthy Life Styles and Non-communicable Disease Control, Moscow, 2011. WHO. GENERAL ASSEMBLY 19-20 September 2011 with Heads of State and Government and representatives of States and Governments. Political declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases worldwide. WHO, Global Action Plan for the Prevention and Control of NCDs 2013- 2020. WHO, 2013.

Anyway, preventive interventions, once developed the disease, which is known as secondary prophylaxis, are usually complex and often little appreciated. The unsatisfactory results are consistent with the many factors involved, the process developing over decades on a silent way and the usual adult resistance to acquire new habits foreign to his own biography (Known are the difficulties to eradicate a toxic habit as smoking or alcoholism or some dietary preferences). It is not easy to introduce a new lifestyle to an adult and try to improve it is often annoying to the individual and, usually, disheartening for the professional for their poor results.

### Origins and early manifestations of NCDs

The research on the origins of the diseases of civilization has found that all of them sink their roots in the early stages of life. Evidence from clinical epidemiology and pathology research has got together a lot of findings that confirm the notion that the origins of NCDs can in most cases be traced from childhood.

In the case of cardiovascular disease, it has been shown that the diffuse subintimal thickening, antecedent of atherosclerotic plaques, is clearly observed in adolescence. Even more interesting, the first clearly atheromatous lesion, the fatty streak, that precedes the fibrofatty plaque, is already detected in the aorta of some children under one year of age and of the vast majority of teenagers. These morphological alterations are associated early with functional arterial troubles detectable by ultrasound carotid research as our group has published.

Similar arguments and rationale apply to any other condition included in the spectrum of NCDs as the relationship between child's and adult's obesity and hypertension, early acquisition of smoking habit and lung cancer, sun exposure in childhood and melanoma in adulthood, poor calcium intake and lack of physical activity during childhood and adolescence and postmenopausal osteoporosis, and so on.

These data placed the child as a primary target in preventing adult diseases in general and particularly NCDs, because he was out of the question that if we wanted to promote adult health and delay the onset

of these diseases preventive interventions should begin, as soon as possible, in infancy, childhood or/and adolescence. And if the proper habits (diet, activity and life arrangements) are acquired in this period of life would not it be advisable that the preventive efforts be focused on teaching knowledge and health habits to children? This rationale was to form the first link in the chain of which myself early and EAPE/AEEP last years now find a part.

### Prevention of NCDs from childhood: a rational approach to the problem

This new approach was taken on early by EAPE that initiates a number of activities that crystallized in one of the first international conference on the subject: The 1993 EAPE/AEPE Congress entitled "Prevention from childhood degenerative diseases of adults: pediatric educational aspects" which was chaired in Rome by the professor Andrea Vania. The Congress included a great number of plenary sessions, interventions on school childcare and recommendations on food consumption. The content of the Congress was enriched with numerous free papers and posters which gave opportunity to know the status of the issue in most European countries and to propose educational ways to prevent NCDs and their background, especially atherosclerosis, diabetes, obesity and hypertension.

But in that meeting the execution of the functions and educational tasks was distributed, and diluted, among a large number of professionals from various disciplines which prevented anyone from being considered directly responsible. I translate verbatim a paragraph from one of the plenary session concerning the agents responsible for preventing obesity in children and adolescents to facilitate understanding of its ineffectiveness:

Every pediatrician, every familiar practitioner, every nurse having confidence of the family should provide them (preventive activities) currently and automatically. Further are kindergarten governesses and school teachers, people working in education and culture, psychologists, physical education specialists, volunteers founding Weight Watching Clubs, people working in mass media, editors working in children and youth journals, TV program preparing people, sponsors and so on.

Even so, due to professional status of EAPE / AEEP members much of the responsibility for promoting adult health from childhood was assigned to and assumed by pediatrician. But it would be pretentious to demand pediatrician in their daily practice to deal with the prevention of future adult diseases, for which it has not been trained and when he can barely cover current care. And the immediate future does not appear brighter and promising.

Our research on the prevention of dental caries in three Valencia schools during the eighties had allowed us to demonstrate that teachers were undoubtedly very efficient agents for inducing permanent healthy habits in children. The research was carried out by school teachers that taught the pupils dental cleaning followed by rinsing with a mouthwash solution of FINa 0,20 % a minute once a week. Pediatrician intervention was limited to plan the assay and assess dental caries (co and CAO indexes) once a year. The initial study lasted three years. Its results showed a significant reduction of caries (38 % in experimental group compared with 82 % in control group) and proved that teachers were able to induce health practices and habits to children. Since then I have not stopped thinking about the possibilities that it offers the school in the promotion of the health of the human being. I hope that I may be excused for entering on these personal details, as I give them to show that I have not been hasty in coming to this point.

Therefore, after failing since eighties in our attempt to introduce a course designed for health and its problems in the curriculum of the Faculty of School Teachers, the Pediatric Unit of the the Department of Pediatrics, Obstetrics and Gynecology, took advantage of the constitution of the European Higher Education Area and the European modification of curricula (Bologna Plan) to introduce the core subject of "Children, Health and Nutrition" in the Degree of School Teacher of the Valencia University. The training program is devised to offer future teachers a formal body of knowledge, practical skills and attitudes to promote the health of his future pupils and project on their future as adults.

Training is provided in the first course of the degree in the Faculty of School Teachers with 4.5 ECTS credits allotted and it is developed on eight blocks of subjects:

**First block:** The teaching begins with an exhibition of the biological cycle of human being with his four classic stages:

- i. Initial, unicellular period (zygote), in which the genome is defined.
- ii. Period of development, in which genetic information is materialized from environmental materials and in strict connection with it. This period includes two subperiods, the intrauterine and the extrauterine one, with infancy, childhood and adolescence.
- iii. Period of adulthood, or biological fullness and capabilities psychological and social.
- iv. Period of decline or old age, or decline that ends with death.

About this generic framework that includes all human life to future teachers are offered a basic knowledge of biology, psychology and sociology of healthy and sick child to acquire knowledge, practical skills and attitudes to enable them to promote healthy lifestyles that serve children in the present and when they reach maturity.

**Second Block:** Nutrition and its importance to the health of children and their influence on the adult.

**Third block:** Physical exercise and sport.

**Fourth block:** Basic information on the major diseases of children especially those affecting the school.

**Section five:** Main diseases of adults.

**Section six:** Accidents and poisoning.

**Block seven:** Preventing toxic habits (Smoking, alcohol and illegal drugs).

**Eighth block:** First aid and basic guidelines for cardiopulmonary resuscitation.

Teaching is given by university professors of Pediatrics as they can teach and know biology, psychology and sociology of infants and children.

As methods of teaching theoretical and practical lessons, seminars, workshops and tutorials are used. The distribution of the theoretical and practical educational activities includes 20 units of two hours (90/30 mins per unit) to which 67 non-contact hours are added for tutoring, team and individual work, and a variable number of hours for workshops and updating information. There is a common virtual platform for the entire University (<http://aulavirtual.uv.es>)

The experience gained in the last 6 academic years has been valued by students and teachers as very positive. Two facts has been considered restrictive: The low number of hours and the location of

teaching in the first course, when students are less aware of the crucial importance of children health of and their subsequent impact on the adult one.

This experience, incomplete as it could be and biased by local determinants, was taken in consideration by the Executive Committee of the AEEP / EAPE met in Paris in February 2012 to the point of being approved as the conference subject for the next Congress. This took place in Bordeaux in late 2013, chaired by Yannick Aujard and superbly organized by the President of the AEEP / EAPE, Claude Billeaud.

This important meeting was well-attended by various national societies of pediatrics and neonatology, by the International Association of Social Pediatrics, the French Association of School and University Health, the Institute of Public Health, Epidemiology and Development, the European Childhood Obesity Group and the International Group for the Prevention of Atherosclerosis in Childhood. The meeting was supported by the Conseil Régional d' Aquitaine and the University of Valencia. A large representation of the main European institutions involved in health education let us discuss, sometimes passionately, about the pros and cons of the model presented by Valencia and some other alternatives.

I think justice express our appreciation for the effort made by the AEEP /EAPE President whose presence among us prevent me dwell on the praise.

### EAPE / AEEP future goals

With regard to the degree of school teacher we have to complete program content for teaching the promotion of adult health as its child's one is already well defined in school medicine. Local special features must be taken into account. It would be advisable arrange them by functions and tasks. This must be a commitment of EAPE taking as primary sources of information Health Statistics and Clinical Epidemiology, and completed if necessary with collaborations from adult medical specialties.

With regard to primary school is needed to complete the current educational content for children's health with the innovations on adult health. This must be collaborative work of School Institutions and EAPE. Another important subject, the distribution of contents and planning and the program throughout the schooling courses is a matter of School Institutions.

Obviously it is necessary to reach an agreement on the time devoted to teaching the promotion of child health and adult at school that could be 10-15 % according several experiences.

I make here a point to warn that I overlook the essential role of parents in the education of children because as it is well known home is an inaccessible private sector to formal training: it remains beyond the possibilities of intervention of health and education professionals and it is actually and legally out of direct institutional influence.

### Last remarks

The summary just presented is necessarily imperfect. I cannot include the numerous bibliographical references and texts that endorse my various statements but I rely on that the audience will put some confidence in the accuracy of the exposed matter. I have tried to present the question as I have lived through it, but it has not been my pretension that is accepted ado as covered by the veil of the believer. Although I have sought to be cautious in my manifestations I am conscious that the strength with which I have presented them may have offered an image of sharp edges in excess. This is what

happens to innovative synthesis of complex materials so often. I have intentionally generalized but I can assure you that no one can feel more than I the need to fill in more detail the exposed. I further agree that some points are controversial subject on which can provide data that contradict the vision set. But I don't think admissible to start from nothing, the rocking chair speculation which so inclined are we, Mediterranean people, as some other formulations that directly or tangentially have been made about this issue does not involve more than a deliberate diastole of judgment and reflection.

I will have reached fully the chased goal if I have managed to attract the attention of the presents on this new approach since I think that the solution of the most important problems of the current medicine resides largely in investigations of this type. But not for it I am going to attribute to discrepant and sceptical more mistake than the derivative of the ignorance on the mighty power of transformation by education, especially when this one is orientated to the common good.

I am sorry deeply that the lack of time has prevented me from having the satisfaction of being grateful for the generous aids and observations that I have received of many companions, specially pediatricians and teachers during this long voyage. In discharge for these omissions I have wanted to leave witness of the dignity that carries the silence and the anonymity of many persons as those who have helped to take forward this initiative; human beings who give continuity to the societies and institutions, beings who with their effort, avoid every day, that the life of these interrupts.

## Acknowledgements

None.

## Conflict of interest

The authors declare no conflict of interest.

## Funding

None.

## References

- Abella Bazataqui AM. Experimental study of the anticaries effect of sodium fluoride mouthwash in schoolchildren from Valencia. Director J Brines. Valencia. 1987.
- Abella Bazataqui AM, Brines J. The Problem of Dental Caries in Children: Prevention Using a Weekly Mouthwash of Sodium Fluoride. *An Esp Pediatr*. 1989;31(3):256–260.
- A.P.E.E./A.E.P.E. Prevention in Childhood of Degenerative Adulthood: Pediatric Educational Aspects / Prevention in Children of Degenerative Diseases in Adults: Pediatric Educational Aspects, 24th Annual Meeting, Abstract Book/Livre des Résumés, Rome. 1993.
- Berenson GS, Wattigney WA, Tracy RE, et al. Atherosclerosis of the aorta and coronary arteries and cardiovascular risk factors in persons aged 6 to 30 years and studied at necropsy (The Bogalusa Heart Study) *Am J Cardiol*. 1992;70(9):851–858.
- de Onis M, Martínez-Costa C, Núñez F, et al. Association between OMS cut-offs for childhood overweight and obesity and cardiometabolic risk. *Public Health Nutr*. 2013;16(4):625–630.
- Goodlad JL. The Educational Program to 1980 and Beyond. In: Morphet EL & Ryan CD, editors. *Designing Education for the Future*, No. 2. Citation Press, New York, USA. 1967.
- Kim JY, Farmer P. Aspectos mundiales de la Medicina. In: Anthony S, et al. editors. *Harrison, Principios de Medicina Interna*, McGraw Hill, México. 2009. p:6–15.
- Kremp O, Roussey M, Cochat P. *Pédiatrie sociale ou l'enfant dans son environnement*, 2 tomes, Paris, Doin. 2010.
- López Piñero JM, Brines Solanes J. *Historia de la Pediatría*, Albatros, Valencia. 2009.
- Mande R, Masse N, Manciaux M. *Pédiatrie Sociale*, Paris, Flammarion. 1972.
- Martin Moreno JM. Chronic disease prevention and the New Public Health. *Public Health Reviews*. 2010;32(1):120–154.
- Martin-Moreno JM, Apfel F, Sanchez JL, et al. The social nature of chronic noncommunicable diseases and how to tackle them through communication technology, training, and outreach. *J Health Commun*. 2011;16(Suppl 2):94–106.
- Martin Moreno JM. La pandemia de enfermedades crónicas no transmisibles: Retos de salud pública y nuevos paradigmas en el siglo XXI. *Discurso de Ingreso en la Real Academia de Medicina y Ciencias Afines de la Comunidad Valenciana*.
- Martínez-Costa C, Núñez F, Montal A, et al. Relationship between childhood obesity cut-offs and metabolic and vascular comorbidities: comparative analysis of three growth standards. *J Hum Nutr Diet*. 2013;27(Suppl 2):75–83.
- Martinez Costa C. Theoretical contents of the subject: Childhood, health and nutrition. En: *Teaching the primary school teachers on prevention of adult's diseases in childhood. EAP/APEE Congress. Bordeaux, Book of the Congress*. 2014. p. 48–49.
- Monfort M. Health education and the Spanish curriculum for teacher training. En: *Teaching the primary school teachers on prevention of adult's diseases in childhood. EAP/APEE Congress. Bordeaux, Book of the Congress*. 2014. p. 46–47.
- Núñez F. The promotion of adult health from childhood. Practical training. En: *Teaching the primary school teachers on prevention of adult's diseases in childhood. EAP/APEE Congress. Bordeaux, Book of the Congress*. 2014. p. 50–51.
- Puska P, Tuomilehto J, Nissinen A, et al. *The North Karelia Project: 20-year results and experiences*. National Public Health Institute. Helsinki. 1995.
- Rodríguez-Artalejo F, García EL, Gorgojo L, et al. Consumption of bakery products, sweetened soft drinks and yogurt among children aged 6–7 years: association with nutrient intake and overall diet quality. *Br J Nutr*. 2003;89(3):419–429.
- Núñez F, Martínez-Costa C, Sánchez-Zahonero J, et al. Carotid artery stiffness as an early marker of vascular lesions in children and adolescents with cardiovascular risk factors. *Rev Esp Cardiol*. 2010;63(11):1253–1260.
- WHO. *Preventing Chronic Diseases – a vital investment*. WHO. Geneva. 2003.
- WHO. *2008–2013 Action Plan for the Global Strategy for the Prevention and Control of Non-communicable Diseases*. Geneva, WHO. 2008.
- WHO. GENERAL ASSEMBLY. Resolution 64/265. *Prevention and control of non-communicable diseases*. 2010.
- WHO. *First Global Ministerial Conference on Healthy Life Styles and Noncommunicable Disease Control*, Moscow; 2011.
- WHO. GENERAL ASSEMBLY 19–20 September 2011 with Heads of State and Government and representatives of States and Governments. *Political declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Noncommunicable Diseases Worldwide*. 2011.
- WHO. *Global Action Plan for the Prevention and Control of NCDs 2013–2020*. WHO. 2013.
- Willgoose CE. *Health Education in the Elementary School*, (4th edn), W. B. Saunders Co, Philadelphia, USA; 1974.