

Can Halberg's approach to chronotherapy improve world health?*

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An interesting viewpoint has been proposed by Eggleston and Finkelstein in a recent issue of JAMA [1]. It is most challenging that enhanced focus on population health is increasingly invoked as a potential solution to the persistent problems facing the US healthcare system, including failures to achieve targets for health outcomes, eliminate disparities in health, healthcare and public health, and function within a sustainable budget. We partly disagree, however, that the Affordable Care Act (ACA) and related developments alone could change incentives to align healthcare, public health and social services to a significant extent. We understand that problems are not limited to the US healthcare system, but also apply to the world healthcare system, because mortality due to non-communicable diseases (NCDs), such as cardiovascular diseases, diabetes and cancer, is a worldwide problem [2–5]. Effective control of NCDs requires a comprehensive approach. There is a need for collaboration between the department of health, the department of agriculture, food and nutrition, the department of education and the department of sports on the one hand, and transportation and housing on the other hand, in every country. **But the lead needs to be provided by the United States, because what is being done in the USA has a substantial influence on all other countries.** New improved guidelines have been proposed recently by several agencies to prevent NCDs and achieve population goals that, unfortunately, have not been successful thus far [6–8].

Already by 3000 BC, “aham annam” was known in Sanskrit, meaning that “we are what we eat”. Professor Franz Halberg revolutionized the field of nutrition by his demonstration that when we eat can make the difference between life and death in the experimental laboratory, and between weight gain or weight loss in everyday life [9]. His critical contributions have far-reaching implications. To feed the under-nourished in populations stricken by starvation, eating dinner may be associated with a greater weight gain than eating in the morning. On the other hand, to manage one of today's great scourges in the more opulent countries, namely obesity and the metabolic syndrome, eating breakfast rather than dinner may be beneficial [9]. As Halberg also showed, the use of a calorie consumed in the morning differs from that ingested in

*Professor Franz Halberg died at the age of 93 years on June 9, 2013

the evening, contributing to different hormonal relations within the circadian system prevailing when a single daily meal is taken as breakfast only or dinner only [9]. The underlying metabolism and its mechanisms, as they relate to health and longevity, uncovered by Franz Halberg in the innumerable studies he designed and conducted on several continents, remain beyond the frontier of current scientific investigations. These studies attest to his visionary leadership, his ability to look at the facts without any preconceived ideas, and his truly amazing humility and eagerness to serve all social classes, as social determinants of health are of critical importance [10].

A health promotion policy could thus be developed so that students from play schools to post-graduate colleges as well as citizens working in offices or factories can have the opportunity to get slowly absorbed, micronutrient-dense, ω -3 fatty acid and flavonoid-rich, ready-prepared functional foods, cola drinks/fruit juice and fresh foods and designer foods, as well as spare time physical activity, at affordable cost. Apart from what to eat, students and citizens should also learn “when to eat”. Those with risk factors such as obesity, metabolic syndrome and hypertension should be advised to eat small protective foods at breakfast and small frequent meals in the day and just salads at dinner to lose weight and prevent weight gain [9]. Guidelines for developing populations with under-nutrition patterns and poverty may be advised to eat more at dinner to gain weight and conserve nutrients and calories to maintain normal weight. Studies on timing nutrition conducted by Halberg are not yet popular among experts in charge of developing guidelines for preventing obesity, hypertension and other NCDs [6–8, 11, 12].

The Affordable Care Act should also place emphasis on public health policy to provide tax relief to the food industry, farmers growing healthy foods (fruits, vegetables, seeds and nuts, and herbs), food departmental stores and public/private health promotion centers (gymnasiums, yoga and meditation centers, parks and foot paths for cycling and walking). These may be great steps in a tobacco-free world toward the prevention of NCDs. There is a need to develop more concentrated flavonoid-rich wines, like Chinese wines, to avoid the use of alcohol-rich spirits. These efforts should also be started in the Third World and lower middle income countries, apart from the developed countries, for primary prevention of obesity, which is a precursor of NCDs.

Emphasis on Halberg’s approach, namely chronotherapy with foods, drugs and exercise, as well as with radiotherapy and cancer chemotherapy, deserves renewed interest in view of its promise to reduce cost, increase efficacy and

limit adverse effects, in both developing and developed countries [9]. The required quantity of food, drugs, radiotherapy and exercise could be reduced by up to 50%, while their efficacy could be increased several fold with fewer and less severe adverse effects [9, 13–15].

In brief, Halberg’s approach may very well be a solution for greater focus on individual health as well as on public health, which is increasingly invoked when considering the persistent problems facing the healthcare system worldwide. Despite sincere efforts, most of our health agencies, including the WHO, have failed to achieve targets for health outcomes, eliminate disparities in health and healthcare, and function within a sustainable budget [8, 10].

Key point:

- Effective control of NCDs requires a comprehensive approach; however, even the new guidelines are not sufficient, so far.
- “Aham annam” in Sanskrit means that “we are what we eat”.
- Professor Franz Halberg first demonstrated that when we eat can make the difference between life and death. Chronotherapy with foods, drugs and exercise, as well as with radiotherapy and cancer chemotherapy, deserves renewed interest.
- Chrono-optimisation could reduce the required quantity of food, drugs, radiotherapy and exercise by up to 50%, while their efficacy could be increased several fold with fewer and less severe adverse effects.
- Halberg’s approach may emphasize both individual and public health to tackle the persistent problems facing the healthcare systems worldwide.

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