Editor's Page

Unveiling the Secrets of Longevity: The Ikaria Study

CHRISTODOULOS I. STEFANADIS

1st Department of Cardiology, Athens Medical School, Athens, Greece

It is well known that life-expectancy rates show varying distributions among different populations, with the proportionally largest advanced-age populations being found in industrialised countries. This has been mainly attributed to the medical advances in cancer and cardiovascular prevention and therapy that have reduced morbidity and mortality. Especially in Greece, life expectancy at birth has been considerably increased during the last three decades.[1] The Framingham Heart study has revealed that the levels of systolic blood pressure and serum cholesterol, glucose intolerance, smoking history, sex, and education status are the most important predictive factors for survival and morbidity-free survival to the age of 85 years.[2] During the last decade, several epidemiological studies have been conducted worldwide in elderly individuals, including the HALE project, SENECA study, EPIC elderly study, cardiovascular health study, MEDIS and IKARIA studies. The 7-country study was the first investigation concerning longevity that illustrated the strong correlation between coronary disease incidence and average saturated fatty acid intake or serum cholesterol levels. Furthermore, during its 40-year follow up, the same study concluded that the most important determinants of survival are age, body mass index, respiratory capacity, physical activity and blood pressure levels.

During the last two years, five places in the world, Loma Linda in Mexico, Nicoya in Costa Rica, Sardinia in Italy, Okinawa in Japan, and Ikaria in Greece, have been recognised as having the greatest percentage of people living above the age of 90 years. In particular, the inhabitants of the island of Ikaria show a high percentage, above 30%, of deaths above the age of 90, while more than 1% of the population lives to more than that age. It is quite peculiar that the average age at death from natural causes is nearly 10 years greater than in other parts of the world, as well as in Greece in general.

There is increasing scientific evidence that there are protective health benefits from traditional ways of living, involving diet, physical activity status, an active social life and an optimistic attitude. In an attempt to evaluate the levels of several cardiovascular risk factors and to shed light on the secrets of longevity in Ikaria island, we conducted a population-based health and nutrition survey, the "IKARIA study". From June to October of 2009, we studied 343 men and 330 women, aged 65 to 100 years (mean age 75 ± 6.5 years, 49% men), and 657 below the age of 65 (mean age 54 ± 7, 46% men), all permanent inhabitants of Ikaria Island. As well as various socio-demographic, bioclinical, lifestyle and dietary characteristics, cardiovascular risk factors (hypertension, diabetes, hypercholesterolaemia, obesity), anthropometric indices, physical activity status and biochemical parameters related to cardiovascular risk were evaluated.

The main findings revealed a high prevalence of cardiovascular risk factors in the elderly cohort, but also a high adherence to a Mediterranean type of diet, habitual physical activity, noon siesta, and engagement in social activities, with rather low rates of hypertension.[3] In particular, daily physical activity was found to be associated with lower rates of cardiovascular disease, lower rates of obesity, hypertension, autonomic system dysfunction and diabetes mellitus, while habitual exercise also had a beneficial effect on left ventricular hypertrophy, even in obese elderly individuals. Increased physical activity also showed antiarrhythmic protection by decreasing ventricular repolarisation, especially in females, linking fitness with cardiovascular health.[4]

Additionally, healthy dietary habits seem to me-

diate the adverse effect of diabetes mellitus on aortic elastic properties in elderly individuals, while long-term adherence to the Mediterranean diet reduces the prevalence of hyperuricaemia, which is rather increased in elderly individuals.[5]

Achieving successful ageing means avoiding emotional and cognitive dysfunction while sustaining physical ability. Although recent scientific data illustrate that the association is not inevitable, the intervention of national health services in lifestyle modification in developed countries has shown a great beneficial impact on quality of life and longevity.

The prospective design of the IKARIA study could be useful in revealing those lifestyle, clinical and biochemical factors that are connected with healthy ageing, even in the inhabitants of this geographically isolated island of the Aegean Sea.

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