

Editorial

Keys to a Long and Healthy Life

Claves para disfrutar de una vida larga y sana

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If you ask anybody what they expect from life, most would probably answer “to have a long and healthy life”. In the Middle Ages, druids tried to find “the elixir of eternal youth”. Nowadays, scientists have taken on this quest to discover the keys to a long and healthy life. In 2005, the National Geographic magazine published an article entitled “The secrets of a long life” in which Dan Buettner, an explorer and educator, identified 5 geographic areas where people living in good health had the greatest longevity: Okinawa island in Japan, Sardinia and the Ikaria islands in Italy and Greece, respectively, the Loma Linda area in California (US), and the peninsula of Nicoya in Costa Rica.¹ Together with Gianni Pes and Michel Poulain, this author identified clusters of villages with the highest concentrations of male centenarians by using concentric blue circles on maps, which they named “blue zones”.² Although people living in these areas may share common genetic characteristics such as the same beneficial polymorphisms of apolipoprotein E, these authors considered that common lifestyle characteristics might contribute to such healthy aging. These common characteristics were: *a*) a plant-based diet; *b*) moderate alcohol intake, mainly wine; *c*) moderate-to-high physical activity (PA); *d*) life purposes with reduced stress; *e*) engaging in spirituality or religion; and *f*) fewer toxic habits, mainly little smoking.

In a recent study that included data from 123 219 US adults who were followed for up to 34 years, Li et al.³ concluded that participants with 5 low-risk factors such as never smoking, a body mass index (BMI) ≤ 25 kg/m², ≥ 30 min/d of PA, moderate alcohol intake, and being in the top 40% in terms of a high-quality diet reduced all-cause mortality by 74%, cancer mortality by 65% and cardiovascular mortality by 82%. Likewise, in the article by Díaz-Gutiérrez et al.,⁴ recently published in *Revista Española de Cardiología*,⁴ the authors identified a healthy lifestyle that reduced the incidence of cardiovascular disease (CVD) by 78% in a cohort of 19 336 middle-aged university graduates after 10.4 years of follow-up, taking into account that CVD continues to be the main cause of mortality in the XXI century. The characteristics of this healthy lifestyle score included: *a*) no smoking; *b*) high PA (> 20 metabolic equivalents-h/wk); *c*) high adherence to a traditional

Mediterranean diet ($\geq 4/8$ points); *d*) BMI ≤ 22 kg/m²; *e*) moderate alcohol intake with no binge drinking (≤ 5 alcoholic drinks anytime); *f*) having a short afternoon nap (0.1–0.5 h/d); *g*) spending time with friends (> 1 h/d), and *h*) long working hours (≥ 40 h/wk). The similarities and differences between the characteristics of these different “healthy” lifestyles deserve more in-depth analysis.

There is no doubt that smoking is consistently associated with worse health outcomes and increased mortality.⁵ Smokers, even those who report low-intensity smoking such as 1 cigarette per day, have consistently poorer outcomes than never smokers, including a higher incidence of CVD, diabetes mellitus, and cancer. Not surprisingly, smoking cessation reduces the risks for these adverse outcomes.⁵

Doing at least 150 minutes a week (2 hours and 30 minutes) of moderate-intense aerobic activity or at least 75 minutes a week of high-intensity exercise may prevent heart disease and stroke, the 2 leading causes of death in Western countries. In fact, regular PA may also reduce blood pressure, improve the lipid profile, mainly by increasing plasma high-density lipoprotein cholesterol concentrations, reduce body weight, and lower the incidence of diabetes mellitus, metabolic syndrome, and even colon and breast cancer.^{6,7} In agreement with these findings, Li et al.³ reported that practicing 6 or more hours a week of moderate-to-vigorous PA reduces cardiovascular events by 60%, whereas the study of Díaz-Gutiérrez et al.⁴ did not find a significant relationship between moderate-to-vigorous PA and the incidence of CVD. Perhaps the questionnaires used by these authors did not adequately capture PA. By contrast, time spent watching television (TV) is considered a measurement of sedentary behavior and therefore it should be considered as a measurement opposite to PA. Interestingly, in the study of Díaz-Gutiérrez et al.⁴ watching TV for less than 2 hours a day reduced the risk of incidental CVD by 25%. Several previous studies have shown an association between sedentary behaviors, such as watching TV or computer use, and a range of adverse health outcomes such as all-cause mortality, CVD incidence, and obesity. In addition to less energy expenditure, TV viewing has also been related to lesser fruit and vegetable consumption and greater intake of energy-dense snacks and sugar-sweetened beverages.⁸

In all studies, adherence to a healthy dietary pattern is another key element to enjoying a long life. According to the 2015–2020 Dietary Guidelines for Americans of the US Department of Agriculture,⁹ reputedly beneficial dietary patterns are the “healthy”

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American diet, the vegetarian diet, and the Mediterranean diet. Among these, the Mediterranean diet has demonstrated its efficacy in the primary and secondary prevention of CVD with the highest level of scientific evidence.¹⁰ The Mediterranean diet is also useful to reduce all-cause mortality and the incidence of diabetes mellitus, cognitive decline, and neurodegenerative diseases. In addition, a recent systematic review and meta-analysis concluded that the best adherence to a Mediterranean diet is associated with reduced total cancer mortality and a lower risk of breast, colorectal, gastric, and liver cancer, among others.¹¹ Of importance, considering dietary patterns instead of single foods or nutrients is more advantageous because of foods and nutrients are not consumed alone, and their effects on health seem to be additive or even synergic.

The BMI is another important determinant of health and disease. Several studies, including systematic reviews and meta-analyses, have concluded that obesity (BMI ≥ 30 kg/m²) is associated with all-cause mortality. However, the effects of overweight (BMI 25 to < 30 kg/m²) on mortality and the incidence of cardiovascular events are more controversial. Whereas some reviews that included 2.88 million individuals and more than 270 000 deaths observed that overweight was associated with significantly lower all-cause mortality (hazard ratio [HR], 0.94; 95% confidence interval [95%CI], 0.91–0.96) for a BMI of 25 to < 30 kg/m²,¹² other analyses of large cohorts (including 1.46 million white adults and 160 087 deaths), concluded that overweight increased all-cause mortality by 13% (HR, 1.13; 95%CI, 1.09–1.17).¹³ Interestingly, in the latter analysis, the participants with the lowest mortality were those with a BMI between 20.0 and 22.4 kg/m², figures close to the cutoff used by Díaz-Gutiérrez et al. in their article.⁴ Part of these discrepancies in the effects of overweight on health are probably due to systematic errors of self-reported data that can result in substantial misclassification of individuals into incorrect BMI categories.¹⁴

Another relevant issue is the inclusion of moderate alcohol consumption, mainly wine, in a “healthy” lifestyle. Epidemiological studies have consistently observed a lower risk of coronary heart disease (CHD) and myocardial infarction among moderate drinkers compared with abstainers and participants with high alcohol consumption.¹⁵ This protective effect of moderate drinking has been reported in men and women, as well as in healthy participants and patients with CVD. Quantitative analyses have observed that the relationship between alcohol consumption and the risk of CHD follows a J-shaped curve, the lowest risk being at 20 g of ethanol per day (1.4 drinks per day), showing a reduction of 20% in the relative risk for CHD compared with abstainers. The type of alcoholic beverage consumed seems to be of lesser importance, although some studies have suggested that wine and beer, but not spirits, may have similar benefits.¹⁵ However, the relationship between alcohol consumption and stroke is more complex, since some studies have found a protective effect of moderate wine consumption, whereas others failed to observe this effect. These discrepancies may be attributed to confounding factors such as underreporting or the type of alcoholic beverage consumed, but mainly to the drinking pattern. When the results are expressed as g of alcohol per week it is very difficult to differentiate between moderate (1 drink a day for 7 days) and binge drinking (7 drinks 1 day of the week). Thus, the drinking pattern may be the key to the relationship between alcohol and stroke.

New aspects related to the healthy lifestyle habit score used in the article by Díez-Gutiérrez et al.⁴ are the effects of having a short afternoon nap and the time spent with friends and working. A nap or “siesta” has traditionally been related to a healthy Mediterranean lifestyle. In this respect, the Greek EPIC cohort study found napping to be protective against coronary mortality.¹⁶ This effect has been attributed to a reduction in blood pressure and release of stress, especially in male workers. However, other studies have

observed that long naps (> 30 minutes) are associated with increased mortality (14%), especially that related to respiratory diseases (40%) in individuals aged 65 years or younger.¹⁶ Long naps by people living outside Mediterranean areas are probably due to underlying diseases or night-time sleep disturbances that have been associated with an increased risk of death.

Other interesting issues related to the cardiovascular system and longevity is sociability and social support. A recent meta-analysis concluded that loneliness and social isolation are linked to an approximately 30% increased risk of suffering a cardiovascular event or stroke.¹⁷ The underlying mechanisms proposed to explain this association are disturbances in the immune system, high blood pressure, and premature death. However, these issues may be related to some personality traits that have also been related to CVD and hence to longevity. In addition to participants with anxious type A personality, those with type D personality are 3 times more likely to have a heart attack. These latter individuals have a negative outlook on life and tend to suppress their feelings and emotions, as well as their social capacities.¹⁷

Finally, there is the relationship between working hours and health. Contrary to the score used by Díaz-Gutiérrez et al.⁴, long working hours (> 40 h/wk) have been related to poor health outcomes such as anxiety, depression, sleep disturbances, CHD, and even death.¹⁸ Thus, the inclusion of this item in a healthy lifestyle habit score is, to say the least, controversial.

One of the purposes of the authors was to find a score to assess and quantify healthy lifestyles. However, the score proposed in the current article has some limitations, one of which is that, to our knowledge, this score has not been previously validated. In addition, the study cohort is relatively young and very “healthy”, making it difficult to extrapolate these results to other populations.

In conclusion, a healthy lifestyle is one of the most important determinants of longevity, and taking into account some minor variations depending on the part of the world where the person lives, it should be actively promoted by all governments and medical societies to truly increase the health of the overall population.

CONFLICTS OF INTEREST

None declared.

REFERENCES

- Buettner D. The Secrets of Long Life. National Geographic. 2015. Available at: https://www.bluezones.com/wp-content/uploads/2015/01/Nat_Geo_LongevityF.pdf. Cited 3 Apr 2017.
- Poulain M, Pes GM, Grasland C, et al. Identification of a geographic area characterized by extreme longevity in the Sardinia Island: The AKEA study. *Exp Gerontol*. 2004;39:1423–1429.
- Li Y, Pan A, Wang DD, et al. Impact of healthy lifestyle factors on life expectancies in the US population. *Circulation*. 2018. <http://dx.doi.org/10.1161/CIRCULATIONAHA.117.032047>.
- Díaz-Gutiérrez J, Ruiz-Canela M, Gea A, Fernández-Montero A, Martínez-González MA. Association between a healthy lifestyle score and risk of cardiovascular disease in the SUN cohort. *Rev Esp Cardiol*. 2018;71:1001–1009.
- Inoue-Choi M, Liao LM, Reye-Guzman C, Hartge P, Caporaso N, Freedman ND. Association of long-term low-intensity smoking with all-cause and cause-specific mortality in the National Institute of Health-AARP diet and Health study. *JAMA Intern Med*. 2017;177:87–95.
- Smith AD, Crippa A, Woodcock J, Brage S. Physical activity and incident type 2 diabetes mellitus: a systematic review and dose-response meta-analysis of prospective cohort studies. *Diabetologia*. 2016;59:2527–2545.
- Hardefeldt PJ, Penninkilampi R, Ediramanne S, Eslick GD. Physical Activity and Weight Loss Reduce the Risk of Breast Cancer: A Meta-analysis of 139 Prospective and Retrospective Studies. *Clin Breast Cancer*. 2017. <http://dx.doi.org/10.1016/j.clbc.2017.10.010>.

8. Qi Q, Li Y, Chomistek AK, et al. Television watching, leisure-time activity and the genetic predisposition in relation to body mass index in women and men. *Circulation*. 2012;126:1821–1827.
9. U.S. Department of Health and Human Services and U.S. Department of Agriculture. Dietary Guidelines for Americans 2015-2020. 8th ed. 2015. Available at: <http://health.gov/dietaryguidelines/2015/guidelines/>. Cited 13 Jun 2018.
10. Estruch R, Ros E, Salas-Salvadó J, et al. Primary prevention of cardiovascular disease with a Mediterranean diet. *N Engl J Med*. 2013;368:1279–1290.
11. Schwingshack L, Schwedhelm C, Galbete C, Hoffmann G. Adherence to Mediterranean diet and risk of cancer: An updated systematic review and meta-analysis. *Nutrients*. 2017;9:1063.
12. Flegal KM, Kit BK, Orpana H, Graubard BI. Association of all-cause mortality with overweight and obesity using standard body mass index categories: a systematic review and meta-analysis. *JAMA*. 2013;309:71–82.
13. Berrington de Gonzalez A, Hartge P, Cerhan JR, et al. Body-mass index and mortality among 1.46 million white adults. *N Eng J Med*. 2010;363:2211–2219.
14. Acevedo P, Mora-Urda AI, Montero MDP, Cabañas MD, Prado C, Marrodán MD. Is Overweight on the Decrease in the Adult Population? Differences Between the 2009 and 2014 European Health Surveys in Spain. *Rev Esp Cardiol*. 2017;70:875–876.
15. Costanzo S, Di Castelnuovo A, Donati MB, Iacoviello L, de Gaetano G. Wine, beer or spirit drinking in relation to fatal and non-fatal cardiovascular events: a meta-analysis. *Eur J Epidemiol*. 2011;26:833–850.
16. Leng Y, Wainwright NWJ, Cappuccio FP, et al. Daytime napping and the risk of all-cause and cause-specific mortality: A 13-year follow-up of a British population. *Am J Epidemiol*. 2014;179:1115–1124.
17. Valtorta NK, Kanaan M, Gilbody S, Ronzi S, Hanratty B. Loneliness and social isolation as risk factors for coronary heart disease and stroke: systematic review and meta-analysis of longitudinal observational studies. *Heart*. 2016;102:1009–1016.
18. Bannai A, Tamakoshi A. The association between long working hours and health: A systematic review of epidemiological evidence. *Scand J Work Environ Health*. 2014;40:5–18.