INFORMATION AVAILABILITY: KEY TO DESIGN PREVENTION PROGRAMS

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Planning and prioritizing resource allocation in prevention and patient care depends on availability of information on the evolution of incidence and mortality rates, case-fatality, and other related factors regarding the diseases with the greatest population impact on public health.[1] One example of the importance of having access to quality information is our need to understand cardiovascular diseases (CVD) and the associated risk factors. Indeed, CVD remains the most common cause of death in Europe with >60 million potential years of life lost to CVD in Europe annually.[2]

The identification of major risk factors, besides age and sex, for CVD has been one of the most important advances in medicine. Essentially, it was confirmed by means of epidemiologic research that CVD was preceded by measurable and reversible predisposing conditions. Thus, the “risk factor approach" involves an explanatory framework giving some sense of who is at greatest risk and what one might do to decrease that risk.[3] In the last decades, major cardiovascular risk factors have been defined, given their relatively high prevalence in CVD-prone populations, their causal relationship with an increased incidence rate of disease, their dominance in risk prediction over other putative cardiovascular risk factors, and their well-established amenability to prevention and control.

Measuring the prevalence of cardiovascular risk factors in different populations and settings requires several conditions to be met: first, a well-delimited population to generate population-based data on trends in location-specific prevalence; second, definitions of cardiovascular risk factors amenable to standardization, enabling reliable data collection and ensuring comparability with other studies; third, components of this definition that are relatively immune to temporal changes so that time trends can be

established; finally, long-term monitoring of prevalence with systematic and rigorous methods for data collection.[4]

The manuscript published in the current issue of the European Journal of Preventive Cardiology entitled 'Temporal trends in atherosclerotic cardiovascular disease risk among U.S. adults. Analysis of the National Health and Nutrition Examination Survey (NHANES), 1999-2018.' aims to assess trends in the estimated 10-year atherosclerotic cardiovascular disease risk based on the prevalence of cardiovascular risk factors among United States of America adults from 1999-2000 to 2017-2018 with no established CVD. To that end, Chobufo et al. compared 10 serial cross-sectional analysis developed in the context of the NHANES Study. The authors concluded that the 20-year trend of atherosclerotic CDV risk showed a non-linear downtrend from 1999 to 2018. Nevertheless, the prevalence of diabetes increased whereas, the cholesterol levels and the prevalence of smoking decreased.[5]

The analysis of the temporal trends in the disability-adjusted life years (DALYs), as a measure that combines mortality and morbidity in a single common measure, also gives valid information for understanding the burden of CVD. DALYs generated by CVD according to different cardiovascular risk factors (e.g. smoking, high fasting plasma glucose, high low-density lipoprotein (LDL) cholesterol, high systolic blood pressure, high body mass index) were compared in a similar period of time (e.g. 1998-2019) by sex and world region (e.g. East Asia & Pacific, Europe & Central Asia and Middle East & North Africa, Latin America & Caribbean, North America, South Asia, Sub-Saharan Africa).[6,7] Thus, concurring with the NHANES analysis, DALYs for smoking decreased and for high plasma glucose increased in North America.[5,6] These results were also observed in Europe & Central Asia. On the contrary, men from East

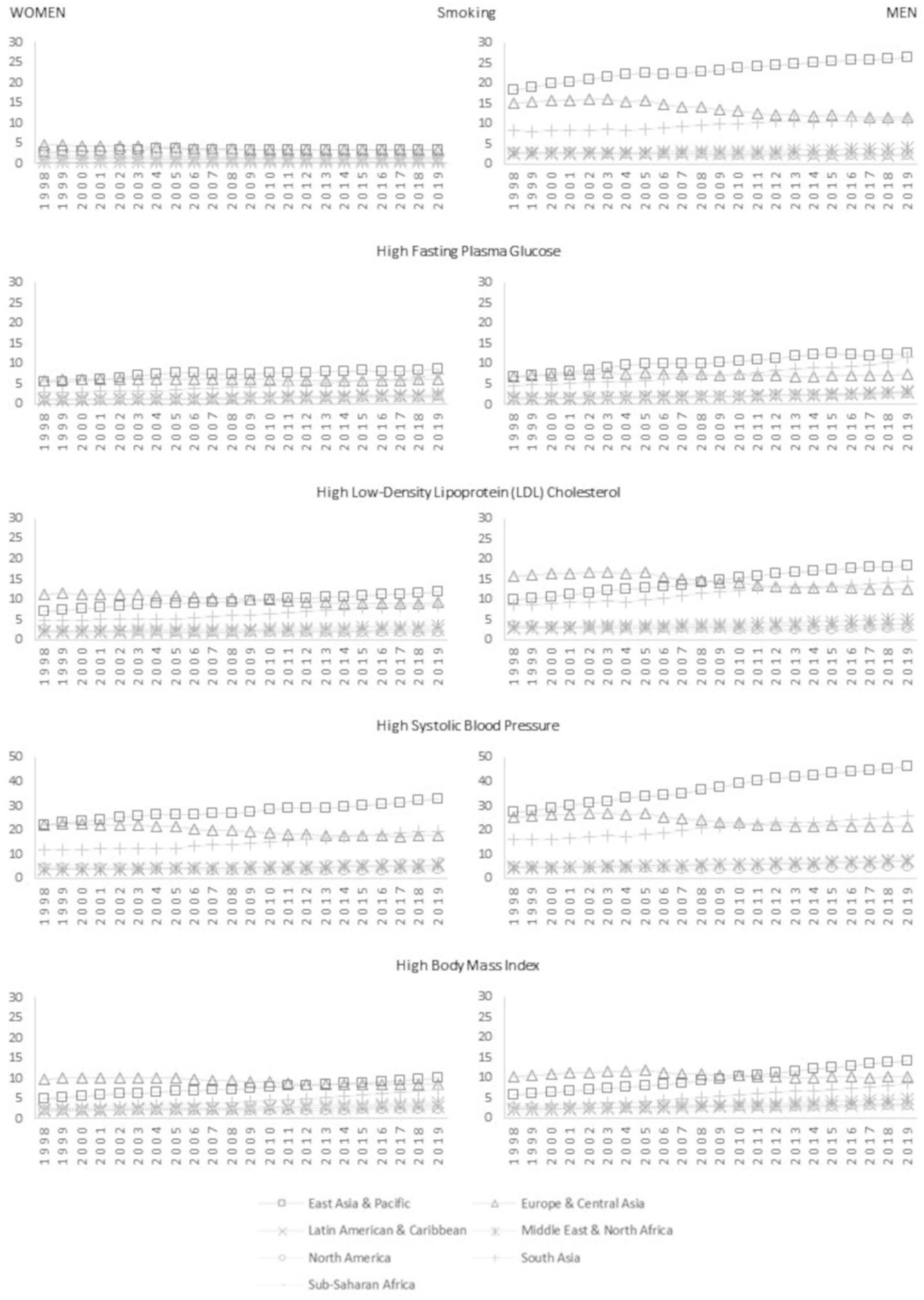
Asia & Pacific or South Asia showed a dramatic increase in this metric. In addition, in these regions the DALYs related with high fasting plasma glucose also showed a steeply increase (Figure 1).[5,6]

Although many epidemiological studies have underlined the rare occurrence of CVD events in the absence of the major risk factors, their sensitivity regarding CVD risk prediction is very low.[8] It should be taken into account that the CVD burden is determined more by a large fraction of the population exposed to a low risk than by the few who are at high risk.[9] The potential mechanisms that trigger an CVD event in some but not all people with similar cardiovascular risk factor prevalence remains unknown. In the organization of CVD prevention programs, it is common practice to distinguish between primary and secondary prevention. Primary prevention includes pre-event preventive activities, while secondary prevention concentrates on recurrence prevention.[1] A major inconvenience is that current screening procedures offer no means to identify those in the population who are developing atherosclerosis and at what pace atherosclerotic lesions are growing. As a consequence, primary prevention activities must be addressed to the whole population, prioritizing certain sectors of the population with some admittedly blunt screening instruments such as coronary risk functions. Meanwhile, CVD deaths have been projected to increase from 17.6 million in 2016 to 21.9 million in 2040. This projected increase is explained by demographics and income (Figure 1). On one hand, population growth will have the highest impact in low- and middle-income countries. On the other hand, the aging of the population in western countries will result in a significant increase in the absolute number of chronic diseases like CVD, despite the declining trend of age-specific death rates.[10]

The clinical guidelines on CVD prevention promote an overall approach that would be similar worldwide, but adapted to different subgroups (e.g., geographic region) on the basis of the risk factor prevalence, event rates, and economic and cultural factors.[1] In fact, the measures to prevent CVD will have an impact not only on the individuals at risk, but also on the population as a whole, as many individual attitudes are shaped by the community's attitude toward health problems.[9] All in all, the final measure of the effectiveness of public health programs or treatment interventions is population-based trends in the prevalence and control of cardiovascular risk factors, and the impact of their modification on CVD incidence, mortality and disease progression. This information is essential to perfect the preventive public health interventions suitable for each country.

Conflict of interest: none declared

Figure 1. Analysis of the temporal trends (1998–2019) in the disability-adjusted life years (DALYs) generated by cardiovascular disease according to different cardiovascular risk factors by sex and world region. Data has been extracted from the Global Burden of Disease Collaborative Network.[7]



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