



The majority of Lebanese have an unmet goal for ideal cardiovascular health contributing to increasing their cardiovascular risk age

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Abstract: The last European Society of Cardiology Guidelines highlighted that cardiovascular risk age (CRA) can be used in any population regardless of baseline risk and secular changes in mortality. This relieves the user from the need for recalibration. CRA also has the advantage of being independent of the cardiovascular (CV) endpoint used, which bypasses the dilemma of whether to use a risk estimation system based on CV mortality or on total CV events. In this study, we evaluated the unmet risk factor goals in a representative Lebanese sample and we calculated the mean CRA of the sample and compared it to the actual mean age. A random sample of Lebanese adults, residing in the Greater Beirut Area, was recruited. Interviews, physical exams, and blood tests were performed. After applying the exclusion criteria for the CRA equation on the sample population, CRA was calculated for the remaining group. A total of 490 participants were enrolled. 199 participants fit the criteria for CRA calculation. Participants of the total study population had a mean age of 45.4±15 years; whereas, the 199 participants had a mean age of 53.3±8.4 years and a mean CRA of 60±11.1 years. More than two thirds of individuals had at least three unmet goals for ideal CV health. These findings contributed to the seven-year difference between the mean CRA and the mean actual age showing that there is room for improvement in community preventive efforts.

Keywords: Cardiovascular disease (CVD); cardiovascular risk age; ESC guidelines

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Introduction

The recent European Society of Cardiology (ESC) Prevention Guidelines [2016] have set the goals for ideal cardiovascular (CV) health. Furthermore, these guidelines re-emphasized the utilization of cardiovascular health SCORE to calculate cardiovascular disease (CVD) risk and guide management (1). One major drawback to the SCORE system is that it needs to be adjusted in a certain population before it can be used. The ESC Guidelines highlighted that cardiovascular risk age (CRA), on the other hand, can be used in any population regardless of baseline risk and secular changes in mortality, and therefore avoid the need for recalibration. CRA also has the advantage of being independent of the cardiovascular (CV) endpoint

used, which bypasses the dilemma of whether to use a risk estimation system based on CV mortality or on total CV events (1-3). As CVD risk factors are increasing in the Arab world, and very few countries, if any, have recalibrated the SCORE system, CRA utilization appears quite appealing (4,5). In this study, we evaluated the unmet risk factor goals in a representative Lebanese sample and we calculated the mean CRA of the sample and compared it to the actual mean age.

Methods

The data collection for this study took place at the American University of Beirut (AUB). The Institutional Review Board

Table 1 Demographics and CVD risk factor prevalence

Variables	N=490 [%]
Gender	
Male	176 [36]
Female	314 [64]
BMI categorical (kg/m ²)	
<30	285 [58]
≥30	205 [42]
Smoker	
Never	124 [25]
Ex	50 [10]
Current	316 [65]
Family member diagnosed with CAD	
No	305 [62]
Yes	185 [38]
Diagnosed hypertension	
No	374 [76]
Yes	116 [24]
Diagnosed diabetes	
No	416 [85]
Yes	74 [15]
Diagnosed dyslipidemia	
No	373 [76]
Yes	117 [24]

CVD, cardiovascular disease; CAD, coronary artery disease.

at the American University of Beirut provided approval to conduct the study.

Study population and sampling technique

The sample used in our study was a random sample of Lebanese adults, residing in the GBA and aged above 18 years. Pregnant women, mentally disabled people and patients on dialysis were excluded from the sample. All participants were invited to present to AUB. A detailed data collection form was filled out for each subject, through interviews, physical exams, and blood tests. After applying the exclusion criteria for the CRA equation on the sample population, CRA was calculated for the remaining group (2).

Data was entered into a database using SPSS 22 for

Windows (SPSS Inc., Chicago, IL, USA). A P value ≤0.05 was used to indicate statistical significance.

Results

Out of the 490 participants who were enrolled in the study, 199 participants fit the criteria for CRA calculation. Participants of the total study population had a mean age of 45.4±15 years; whereas the 199 participants had a mean age of 53.3±8.4 years and a mean CRA of 60±11.1 years. *Table 1* shows the demographics and prevalence of various clinical CV risk factors in the sample population. *Figure 1A* shows the percentage of study population with different numbers of unmet targets. *Figure 1B* shows the percentage of the study population that had met versus unmet goals for each

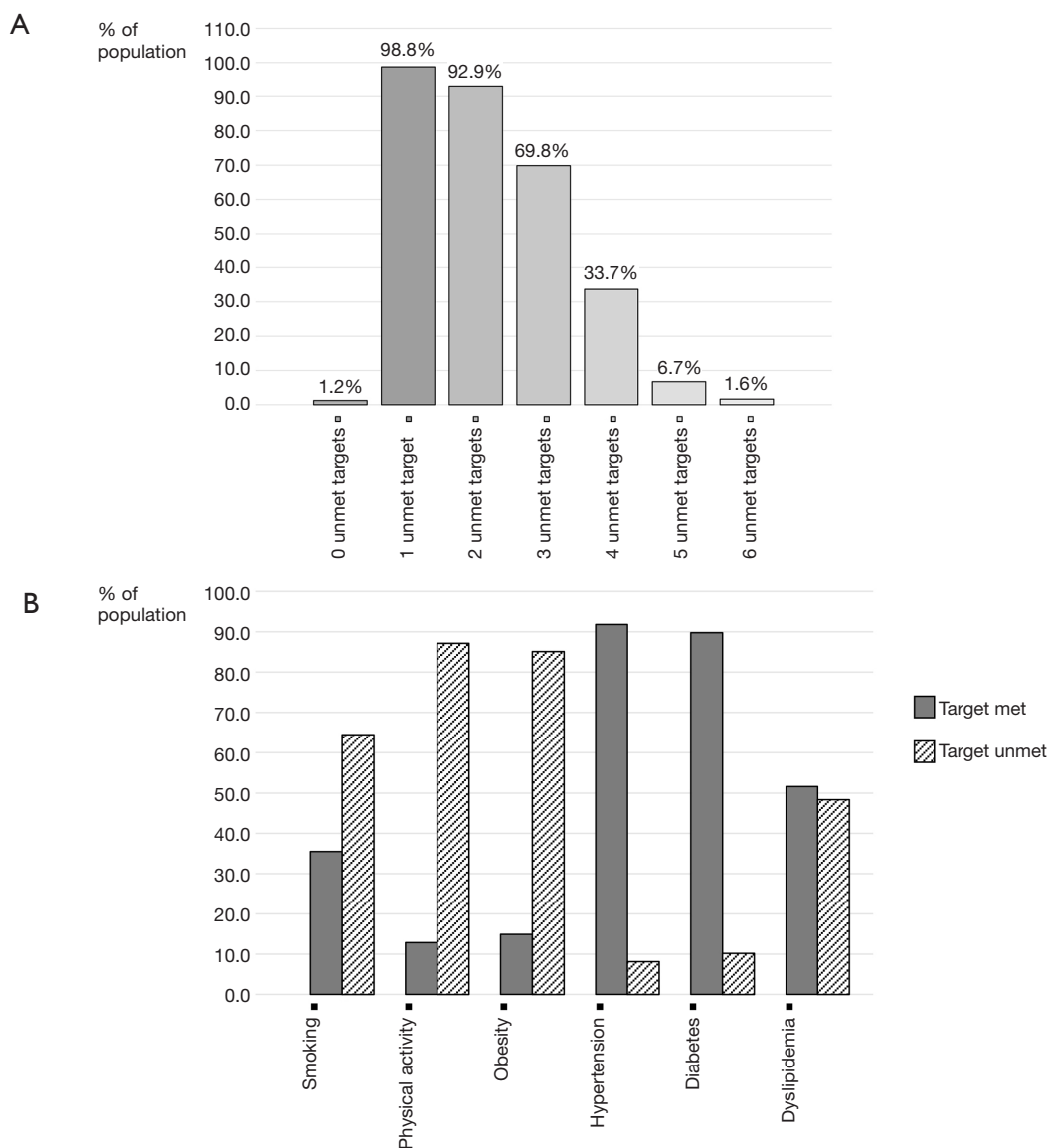


Figure 1 Percentages of unmet target risk factor goals for ideal cardiovascular health. (A) Percentage of unmet target risk factor goals for ideal cardiovascular health; (B) percentage of population with met *vs.* unmet goals for each of the target CVD risk factors. CVD, cardiovascular disease.

of the target risk factors.

Discussion

More than two thirds of individuals within this representative cohort have at least three unmet goals for ideal CV health. The most unmet targets were physical activity, obesity and smoking. Target cholesterol levels were obtained in nearly half of the cohort. These findings contributed to the seven-

year difference between the mean CRA and the mean actual age showing that there is room for improvement in community preventive efforts. Calculating the CRA of individuals would provide them with valid information about their risk for developing CVD using a number that is independent of the CV endpoint used. For this reason we created a digital calculator that calculates CRA and provides individuals with unmet target goals; the digital calculator can be found by following this link (<http://www.aub.edu.lb/fm/>

vmp/Documents/ESC/esc.html) (6). We anticipate that this would help raise public and professional awareness towards diminishing CVD risk factors.

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Footnote

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at <http://dx.doi.org/10.21037/jxym.2017.07.01>). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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References

1. Piepoli MF, Hoes AW, Agewall S, et al. 2016 European Guidelines on cardiovascular disease prevention in clinical practice: The Sixth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of 10 societies and by invited experts). Developed with the special contribution of the European Association for Cardiovascular Prevention & Rehabilitation (EACPR). *Eur Heart J* 2016;37:2315-81.
2. Cooney MT, Vartiainen E, Laatikainen T, et al. Cardiovascular risk age: concepts and practicalities. *Heart* 2012;98:941-6.
3. Cuende JI, Cuende N, Calaveras-Lagartos J. How to calculate vascular age with the SCORE project scales: a new method of cardiovascular risk evaluation. *Eur Heart J* 2010;31:2351-8.
4. Lozano R, Naghavi M, Foreman K, et al. Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet* 2012;380:2095-128.
5. Mokdad AH, Jaber S, Aziz MI, et al. The state of health in the Arab world, 1990-2010: an analysis of the burden of diseases, injuries, and risk factors. *Lancet* 2014;383:309-20.
6. Isma'eel H, Sakr G. Cardiovascular Risk Age Calculator. 1.0 ed. American University of Beirut, 2016. Available online: www.aub.edu.lb