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EDITORIAL COMMENT

From Description to Action

Atherosclerotic Cardiovascular Disease in Adults With Congenital Heart Disease*

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Congenital heart disease (CHD) represents the most common birth defect worldwide, and despite the variable access to care that exists across the globe, congenital heart surgery has allowed a substantial number of children with CHD to survive to adulthood in low- and middle-income countries. In fact, the number of adults with CHD in Latin America is estimated to continue growing by 5 to 6% each year.[1] Despite improved surgical results across recent eras, adults with CHD have a reduced life expectancy and unique cardiovascular risk profile when compared to age-matched controls without CHD.[2,3] In this context, quantifying traditional atherosclerotic cardiovascular disease (ASCVD) risk factors is of extreme importance as they are modifiable and associated with coronary artery disease,[4] atrial fibrillation,[5] heart failure hospitalization,[6] and all-cause mortality[3,6] in the adult congenital heart disease (ACHD) population.

In this issue of *JACC: Advances*, Garcia-Cruz et al[7] describe traditional ASCVD risk factors among 1,171 adults with CHD seen at a tertiary-level center in Mexico City. The cohort was young (mean age 31 years) with predominantly (83%) simple and moderate complexity CHD, where the most frequent ASCVD risk factors were low high-density lipoprotein cholesterol levels, insulin resistance, and prediabetes affecting up to 50% of the study population. Systemic arterial hypertension and obesity affected a third of their cohort, while type 2 diabetes mellitus affected 20% of them. Despite no control group being included in the study, these findings were similar to those seen in the general Mexican population.[8,9] Of note, almost 15% of their cohort was diagnosed with type 2 diabetes mellitus at the time of the study, revealing barriers to ASCVD risk surveillance in the primary and secondary care levels.

The authors also showed significant differences in the prevalence of ASCVD risk factors according to CHD complexity with complex CHD being associated with lower odds of metabolic syndrome and systemic arterial hypertension but higher odds of type 2 diabetes mellitus and hyperuricemia. The latter as a result of secondary erythrocytosis induced by chronic cyanosis and abnormal uric acid excretion[10] or medication side effects (ie, diuretics), which was not reported. The small sample size and younger age of adults with complex CHD in this cohort may explain the inverse association with hypertension and metabolic syndrome, which is not consistent with other studies.[11] Furthermore, patients with cyanotic CHD seem to have similar subclinical carotid and coronary atherosclerosis compared to controls,[12] and therefore risk factor optimization needs to be addressed during lifelong CHD care.

An important and positive finding to highlight is that <5% of this cohort reported active smoking, which is significantly lower than the smoking prevalence seen in the Mexican adult population, estimated at around 19.5%.[13] Mexico has achieved a 45% decline in smoking rates from 2000 to 2020,[14] though higher frequency is still seen in urban areas and

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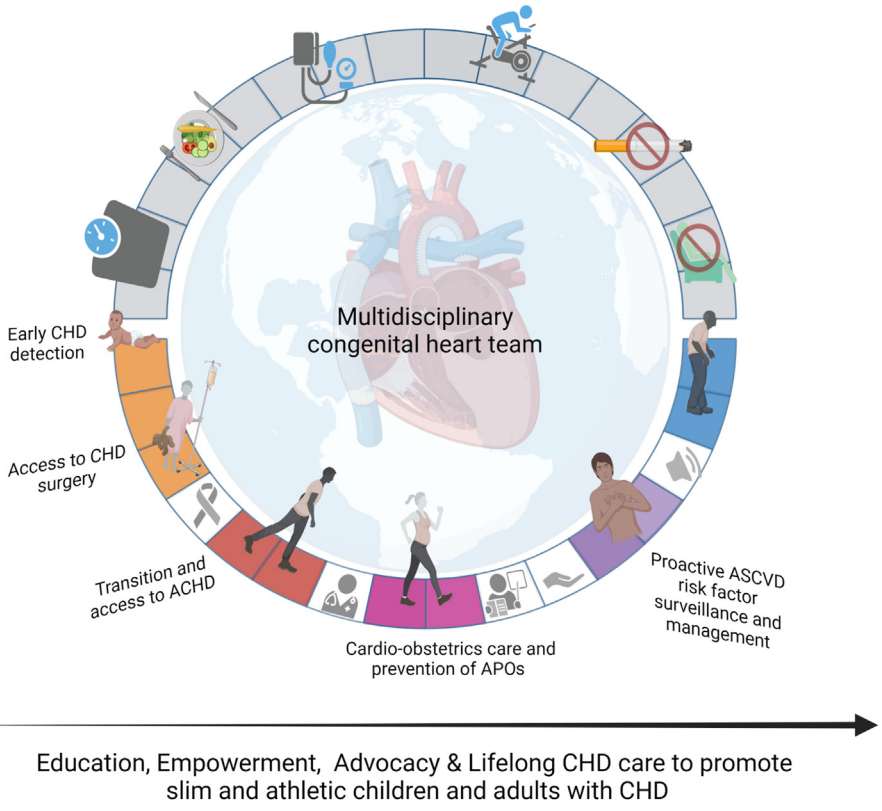
FIGURE 1 Optimizing ASCVD Risk Factors in Adults With Congenital Heart Disease



Created with BioRender.com. ACHD = adult congenital heart disease; APO = adverse pregnancy outcome; ASCVD = atherosclerotic cardiovascular disease; CHD = congenital heart disease.

significant variation across regions and educational status exists.[13] Although socioeconomic status and regional variation were not described in this cohort and underreporting among nondaily smokers cannot be completely ruled out, other studies in the United States[15] and Europe[16] consistently report similar findings, probably representing a global phenomenon: ACHD are aware of smoking consequences and are less likely to smoke. This is the result of all stakeholders consistently sharing the same message and coordinating advocacy, education, and empowerment efforts that can modify harmful behaviors in the ACHD population.

We congratulate Garcia-Cruz et al[7] for their efforts in improving our understanding of the current status of ASCVD risk factors in the Mexican ACHD population. We encourage other ACHD centers in Latin America to report their data including sex-specific risk factors and how social determinants of health influence them. More importantly, we make a call to action towards optimizing ASCVD risk factors in the ACHD population at a global level (**Figure 1**). Children with CHD are at risk of acquiring unhealthy lifestyles and dietary habits early in their lives, affecting their future potential, life expectancy, and long-term outcomes. A mantra coined by Dr Michael Gatzoullis will likely remain relevant in the next few decades: to encourage children and adults with CHD to be "slim and athletic," highlighting the need to promote cardiovascular prevention and cardiorespiratory fitness in our ACHD clinics and favoring health literacy. This, however, is an arduous task that cannot be accomplished without a multidisciplinary congenital heart team

approach, education, patient empowerment, advocacy, and lifelong CHD care.

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