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Fellow's Voice

South Asian cardiovascular disease: Dispelling stereotypes and disparity

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Arguably, Apu Nahasapeemapetilon, the immigrant proprietor who ran the Kwik-E-Mart in the American animated television series *The Simpsons*, was the most famous South Asian person in US popular culture. Although positive perceptions have now replaced the negative stereotypes that were once applied to this minority character, another pervasive misconception is infiltrating our society. The message that poor South Asian heart health is due to a mixture of genetic, cultural, and lifestyle influences, is over-simplified and offers little in the way of a solution. The truth is, we are only starting to understand it.

South Asian individuals (ancestry from India, Pakistan, Bangladesh, Nepal, and Sri Lanka) have a higher proportional mortality rate from ischemic heart disease and cerebrovascular disease, typically earlier in onset, when compared with other ethnic groups. Despite successful domestic campaigns such as AHA's Life's Simple 7, Go Red for Women/Go Red Sari, and national prevention guidelines, an excess in atherosclerotic cardiovascular disease (ASCVD) still remains in these individuals.

Risk assessment remains challenging largely because available risk algorithms have not been derived from or prospectively validated in South Asian adults living in North America. As such, population-specific risk assessment tools (Table 1A) unreliably estimate risk in this group. The UK-QRISK2 includes South Asian ethnicity, however, underestimates risk in women [1]. The JBS3 risk score (Joint British Society for prevention of CVD) accounts for South Asian ethnicity, but also underestimates risk when considering the very small proportion (<2%) of South Asians adults included in the cohort [2]. South Asians ethnicity is defaulted to "White" race when using the AHA/ACC Pooled Cohort Equations (PCE), resulting in risk underestimation. The 2018 AHA/ACC Multi-society cholesterol guidelines now include South Asian ethnicity as a risk-enhancer when considering the initiation of statin therapy [3].

The identification and modification of risk factors remains fundamental to the management of ASCVD. Specifically, considerations for South Asian patients should be given to: 1) a higher prevalence of di-

Table 1A
Atherosclerotic Cardiovascular Disease Risk Assessment Tools.

Framingham Risk Score
AHA/ACC Pooled Cohort Equations
Systemic Coronary Risk Evaluation
3rd Joint British Societies' Risk Calculator
WHO Risk CVD risk prediction charts
UK QRISK2
ETHRISK
UKPDS
NORRISK 2-SADia

abetes and impaired glucose tolerance); 2) hypertriglyceridemia, low HDL-cholesterol, and elevated lipoprotein(a) [Lp(a)] levels; 3) increasing prevalence of overweight and obesity status (with lower body mass index thresholds), hypertension, and use of tobacco products; 4) low rates of physical activity; 5) family history of coronary heart disease status; and 6) risk tends to be higher in those who maintain traditional dietary customs, and those who fully embrace a Western diet [4].

But, you knew all of that.

As we await prospective ASCVD outcomes from ongoing studies such as from the Mediators of Atherosclerosis in South Asians Living in America (MASALA) Study [4], our group has sought to evaluate the cross-sectional relationship between coronary artery calcium (CAC), a robust predictor of future ACSVD events, with the PCE and various traditional and non-traditional risk markers, for the purpose of better understanding and improving risk stratification and management practices in this high-risk ethnic group. For example, our results suggest that the extent of ASCVD-risk overestimation using the PCE is greater among South Asian adults considered at low/intermediate risk than among White

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Table 1B**North American South Asian Cardiovascular and Cardiometabolic Health Studies (Institution/Sponsor).**

Translating a Heart Disease Lifestyle Intervention Into the Community (Northwestern University) MASALA Mediators of Atherosclerosis in South Asians Living in America (University of California, San Francisco)
HealthPals Chronic Cardiovascular Risk Outpatient Management in South Asians Using Digital Health Technology (Stanford) Change of Fructose to Fat in South Asians (Weill Medical College of Cornell University)
SAHARA South Asian Heart Risk Assessment Project (McMaster University) CLASS-ACT Colesevelam, Lipids and Sugars, South Asian Canadian Trial (Canadian Collaborative Research Network)
START South Asian Birth Cohort Study (University of British Columbia)

adults, such that intermediate-risk South Asian individuals have a 73% higher odds of CAC=0 (very low 10-year risk of ASCVD) [5]. Favorably, South Asian adults have lower CAC volume and higher CAC density, but a higher number of calcified vessel when compared White individuals [6,7]. Outcome data are required to confirm the importance of these findings and should be available as the MASALA Study matures [6]. With respect to biomarkers [Lp(a), tumor necrosis factor- α , adiponectin, and leptin], we did not find an association with CAC presence or severity, suggesting markers of inflammation and cardiometabolic risk are independent of CAC and that CAC has a distinct pathophysiology independent of inflammation [8].

Although data on ideal blood pressure goals and optimal medication regimen specific to this population are lacking, the current ACC/AHA Hypertension guidelines identify more South Asian adults who would qualify for interventions aimed at lifestyle optimization. Additionally, the number of South Asian individuals that would qualify for anti-hypertensive pharmacotherapy is higher among those with evidence of any CAC [9].

Modifiable risk factors only partially explain this disparity, suggesting a genetic influence on ASCVD-pathogenesis. In South Asian individuals, family history matters: the presence of a first degree relative (mother, father, sibling) who has suffered a heart attack or stroke at any age, is associated with a high burden of CAC (>300) [10].

The latter part of the last decade saw the emergence of South Asian cardiovascular risk as a National public health matter. Articles in 2018 and 2020 by the New York Times and The Washington Post, respectively, sought to highlight the disproportionate incidence of diabetes mellitus and cardiovascular disease suffered by those of South Asian ethnicity living in the United States. Encouragingly, legislature introduced by Congresswoman Pramila Jayapal (D-Wash.) that sought to create funding directed at South Asian heart health promotion and ASCVD research found bipartisan support in Congress [11]. Similarly, cross-collaboration is encouraged and necessary among all stakeholders and constituency groups involved in South Asian-centric research to enhance our fundamental understanding of the contributors to excess ASCVD risk (Table 1B). Equally important is the promotion and engagement of existing South Asian community-level ASCVD programs as to further educate, promote health literacy, and provide culturally competent health care.

Collectively, we must act now to resist the negative connotation of poor cardiovascular outcomes in the South Asian community. Perhaps a stereotype we should strive for is to be the “model minority” for heart health.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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