https://doi.org/10.36570/jduhs.2022.3.1758

JDUHS

EDITORIAL

Burden of Cardiovascular Disease in South Asians: Risk Factors Prevention and Early Screening is the Key

Dr. Sunita Dodani, MBBS (MD), FCPS, MSc, PhD, FAHA

Professor of Medicine in the Department of Internal Medicine at Eastern Virginia Medical School (EVMS), Norfolk, Virginia, United States.

Correspondence to: dodanis@evms.edu, ORCID: 0000-0002-2126-2048

Cardiovascular diseases (CVD) have declined over the past two decades.[1] However, despite improvements in population health, marked racial and ethnic disparities in longevity and CVD management persist. South Asians (SAs), people with ancestors from the Indian subcontinent constitute 1/5 of the world's population. During the late 1980s, the term "double burden of disease" was first used and can be defined as the burden of non-communicable diseases on top of infectious diseases that remain undefeated.[2] Coronary artery disease (CAD), also called heart disease, stood out as the most common cause of this increasing double burden of diseases. The first study that was published related to South Asians and CAD risk was in 1991 by McKeigue et al.[3] The study assessed the relation of central obesity and insulin resistance with high type 2 diabetes mellitus prevalence and CAD risk in immigrant SAs. A sample of industrial workers and general practitioners in the United Kingdom were shown to have a higher prevalence of diabetes, higher blood pressure, higher fasting and post-glucose serum insulin concentrations, higher plasma triglyceride (TG), and lower high-density lipoprotein (HDL). This study confirms the existence of an insulin resistance syndrome in SAs.

Similarly, in the early 90's, CAD was seen as more prevalent in higher social class in many developing countries and was viewed as the disease of upper class with prevalence of heart disease risk factors such as, hypertension; Type 2 diabetes mellitus; being overweight; central obesity; sedentary lifestyle; family history of CAD; oral contraceptive intake; and postmenopausal status.

Changes in lifestyle due to urbanization, which led to rapid urban expansion, shifts in urban food systems (particularly the availability of cheap ultra-processed food and beverages), diets (convenient and processed foods), and lifestyles (lower levels of physical activity) were and are considered as responsible risk factors for CAD.[4]

CVD is highest in low-income countries (hazard ration of 1.6).[2] Further, immigration from a low-income country to a high-income country, increase the CVD risk by 40%. In developing countries, the increase in CVD burden is largely a result of an increase in the prevalence of the risk factors and due to lack of health care resources and interventions that promote long term survival. As a result, the age-adjusted death rates for CAD are increasing in low-income and developing regions; and a relatively younger population is afflicted by CAD.

In the last few decades, research, though limited, has unleashed some of the clinical and metabolic parameters, as well as lifestyle parameters and genetic factors linked to CVD in SAs. In general, SAs have high low-density lipoproteins (LDL) and low HDL. Recent research also has identified that 50% of SA immigrants have non-functioning HDL, called dysfunctional/ proinflammatory HDL.[5] Additionally, the association of Lipoprotein a (Lpa) with CVD has also been identified as an independent risk factor.[6]

When compared with other populations, SAs are 10 years younger when diagnosed with heart disease and have 4 times higher rates of hospitalization with heart disease compared to other groups. The World Health Organization (WHO) uses a lower body mass index (BMI) point for Asians, as they develop comorbidities at a lower BMI.[7]

However, traditional risk factors and metabolic parameters, though important, do not explain the excess risk and SAs remain at higher risk for CVD even after accounting for all known risk factors. Genetics does play an important role.[8] Further, SAs are the most underrepresented in genetic studies to date (23% of the global population, but 1.3% of genetic studies).

Strategies to Combat CVD in South Asians

To control the rising tide of CVD in SAs, prevention and early disease detection are the key elements. It is important to raise awareness amongst the SA population about CVD risk via cross sectional communication. Furthermore, prevention and control of CVD does not feature prominently in the health care agendas of SA countries. To address these issues, a

multifaceted approach is needed, which should include epidemiological studies to fill in the gaps in knowledge. Additionally, political, social, cultural, and economic issues need to be considered in prevention and control of these diseases, to identify and address key limitations and opportunities specific to the region. There is an immediate need of SA-targeted CVD prevention guidelines, particularly in developing countries. Similarly, targeted policies are also needed, that should include provision of linguistically and culturally appropriate services, public awareness campaigns, ensure access to care, and allocation of sufficient research funds.

Community strategies in limited settings have been successful to date and may be adopted in a more widespread manner to lower CVD risk. At the individual level, concerted effort must be made regarding the provider-patient relationship. Clinicians must demonstrate "cultural competency" not only when it comes to understanding the increased risk of CVD in SA patients but also when making recommendations on diet and lifestyle modification. Prevention strategies are cost-effective yet underrated tools to combat CVD. At the population level, there is a need to reallocate the health budget and revise healthcare policies to house the merited role of prevention strategies. Cost-effective and cultural–geographical friendly policy making is the first step to curb the burgeoning burden of CVD in SA countries. Devoting more resources to the healthcare system is not enough on its own to improve CVD care in developing countries. Instead, an awareness and integration of cultural norms and family structures into treatment plans is also necessary to provide effective care, especially that targeted at prevention and/or lifestyle modification.

There is an immediate need of targeted research on understanding and predicting CVD in SAs. Several knowledge gaps remain in epidemiological research related to understanding CVD in SAs. Future studies should focus on increasing representation of SAs in clinical trials and elucidating genetic and pharmacogenetic differences specific to SAs to enhance precision medicine efforts. The available risk estimators, for example, are based on European and Caucasian populations and predict risk that underestimates the CVD risk in SAs. Therefore, further research is required, and SA-specific CVD risk estimators should also be developed, accurately informing their risk management.

There is a need to develop large, representative, prospectively followed databases of SAs providing information on various CVD risk factors and their contribution to incident CVD. Such databases will not only allow the development of validated CVD risk scores for SAs but will also enable application of machine-learning approaches to provide personalized solutions to CVD risk assessment and management in this population.

Disclosures: None

REFERENCES

1. National Institutes of Health, U.S. Cardiovascular-related deaths in the U.S. fall, but disparities remain.[internet]. 2022. Available from https://www.nih.gov/news-events/news-releases/cardiovascular-related-deaths-us-fall-disparities-remain
2. Singh RB, Beegom R, Mehta AS, Niaz MA, De AK, Mitra RK, et al. Social class, coronary risk factors and undernutrition, a double burden of diseases, in women during transition, in five Indian cities. Int J Cardiol 1999; 69:139-47. doi:10.1016/s0167-5273(99)00010-8
3. McKeigue PM, Shah B, Marmot MG. Relation of central obesity and insulin resistance with high diabetes prevalence and cardiovascular risk in South Asians. Lancet 1991; 337:382-6. doi:10.1016/0140-6736(91)91164-p
4. Yusuf S, Reddy S, Ounpuu S, Anand S. Global Burden of Cardiovascular Diseases: Part I: General Considerations, the Epidemiologic Transition, Risk Factors, and Impact of Urbanization. Circulation 2001; 104:2746-53. doi:10.1161/hc4601.099487
5. Dodani S, Kaur R, Reddy S, Reed GL, Navab M, George V. Can dysfunctional HDL explain high coronary artery disease risk in South Asians? Int J Cardiol 2008; 129:125-32. doi:10.1016/j.ijcard.2007.12.019
6. Shah A, Kanaya AM. Diabetes and associated complications in the South Asian Population. Curr Cardiol Rep 2014; 16:476. doi:10.1007/s11886-014-0476-5
7. WHO Expert Consultation. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. Lancet 2004; 363:157-63. doi:10.1016/S0140-6736(03)15268-3
8. Mehta A, Jain V, Saeed A, Saseen JJ, Gulati M, Ballantyne CM, et al. Lipoprotein and ethnicities. Atherosclerosis 2022; 349:42-52. doi:10.1016/j.atherosclerosis.2022.04.005