Comparison of Cardiovascular Health Profiles Across Population Surveys

Using nationally representative adult CVH data from five different high- to low-income countries, the study sought to assess the prevalence and trajectories of high CVH across the life course.

Cardiovascular diseases (CVD) continue to be the primary cause of death and a significant contributor to morbidity worldwide. The World Health Organization (WHO) estimates that 17.9 million deaths worldwide in 2019 were attributable to CVDs, accounting for 32% of all fatalities. Heart attacks and strokes accounted for 85% of these fatalities.

According to the American Heart Association (AHA), the Life's Simple 7 (LS7 – dietary quality, physical activity (PA), exposure to cigarette smoke, body mass index (BMI), blood pressure (BP), blood glucose, and total cholesterol – are the seven parameters that make up cardiovascular health (CVH).

Using nationally representative adult CVH data from five different high- to low-income countries, the study below sought to assess the prevalence and trajectories of high CVH across the life course.

Methodology

We specifically chose five countries – Bangladesh, Brazil, England, Ethiopia, and the US – that differed in terms of geography, per capita income, disease burden, educational systems, and health system capabilities. In the countries listed above, surveys containing CVH variables (physical activity, cigarette smoking, body mass, blood pressure, blood glucose, and total cholesterol levels) were found.

Participants were omitted if they had incomplete data, were pregnant, or were younger than 18 or older than 69.

To make decisions on harmonisation, the availability of CVH variables (dietary quality, sleep, PA, cigarette smoking, BMI, BP, blood glucose or HbA1c, and total cholesterol levels) and the data collection methods were compared across surveys (see Figure 1).



Figure 1: Harmonization decision matrix (adapted from Schaap et al.)

Key findings

The inclusion criteria for this secondary data analysis were met by 28,092 individuals (18-69 years old) out of the 49,774 participants (0-104 years old) who took part in the surveys (see Figure 2 below).

Figure 2: Consort diagram of participants included in the analysis



While comparable findings for diet and sleep were lacking, evaluation of the remaining CVH measures (BP, glycaemia, BMI, smoking, cholesterol, and PA) corroborated our hypothesis by demonstrating that the prevalence of high CVH scores decreased during the life course in all five countries.

Higher-income countries showed a reduced frequency of high CVH by the age of 18. Excess body weight proved to be the primary cause of poor CVH in higher-income countries, while current smoking was highest in Bangladesh.

The drop in high CVH observed from adolescence across the adult life course may be universal, according to our research, despite significant heterogeneity among the included countries.

Conclusion

Our harmonisation of data on CVH measurements from nationally representative population surveys in five vastly distinct low- to high-income countries demonstrates a consistent trend of decline in overall CVH with age, validating our hypothesis that this is universal across borders. The lack of dietary data suitable for harmonisation is a key issue that must be addressed as new standardised methodologies for CVH population research are developed. Given the fast urban, economic, and nutritional transformations occurring in lowand middle-income countries (LMICs), targeted and contextually relevant interventions to improve CVH trajectories are urgently required to increase the global prevalence of high CVH at all ages.

Reference:

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