Diverging trends in obesity, diabetes, and raised blood pressure in the Americas

See Articles page e123

In *The Lancet Global Health*, the NCD Risk Factor Collaboration—Americas Working Group report the trends in the Americas from 1980 to 2014 of three important cardiometabolic risk factors: obesity, diabetes, and increased blood pressure.[1] The results of this study are important to the Americas because cardiovascular diseases are the main cause of death in almost all countries of the region, stroke and myocardial infarction being the leading causes.[2] The three risk factors addressed in the study are some of those that explained 90% of the population-attributable risk for myocardial infarction in the INTERHEART Latin America study[3] and stroke in the INTERSTROKE study.[4] Additionally, the results of this study are particularly important for Latin American because of the insufficient information available on risk factors trends, other than those published by the NCD Risk Factor Collaboration on obesity, diabetes, and raised blood pressure.[5-7]

The analysis was based on 389 population-based surveys available from community, subnational, and community levels. A hierarchical Bayesian model was used to complete the gaps in information and estimate risk factors trends. The authors found that the prevalence of high body-mass index and diabetes had increased and the prevalence of raised blood pressure had decreased over time. Using a ratio of the prevalence estimates in 1980 and 2014, the authors reported that the obesity ratio was largest in the non-English-speaking Caribbean subregion (4·71 in men and 2·50 in women), the diabetes ratio was largest in the English-speaking Caribbean subregion (2·14 in men and 2·13 in women), and the largest reduction in the raised blood pressure ratio was found in North America (0·56 in men and 0·54 in women). However, these ratios are highly influenced by baseline estimates and the slope of the trend is surprisingly similar in all subregions, given the marked differences in development and health resources between them.[1]

The reported increases in the prevalence of obesity and diabetes are similar to those of multiple national and global reports. A meta-analysis of nine cohort studies estimated an incident rate ratio of type 2 diabetes for overweight of 2·40 in men and 3·92 in women, and for obesity 6·74 in men and 12·41 in women.[8] The reasons for a reduced prevalence of raised blood pressure in the Americas while at the same time the prevalence of obesity has increased are not clear. The same meta-analysis[8] estimated an incident rate ratio of hypertension for overweight of 1·28 in men and 1·65 in women, and for obesity of 1·84 in men and 2·42 in women—a weaker but still important association.

The reduction in the prevalence of raised blood pressure over time in the population reported by Miranda and colleagues has been reported previously.[7] The NCD Risk Factor Collaboration published their results on the worldwide trends in blood pressure from 1975 to 2015, including 1479 studies with 19·1 million adults. The group concluded that systolic and diastolic blood pressure decreased from 1975 to 2015, in high-income western and Asia-Pacific countries, which changed from including some of the countries with the highest blood pressure worldwide in 1975 to the lowest in 2015—Latin America also had a mean blood pressure decrease; however, of lower magnitude. On the other hand, low-income countries in south Asia and sub-Saharan Africa faced the opposite trend.[7]

The causes of this reduction in the prevalence of raised blood pressure are not well known. The changes can be attributed to changes in lifestyle, improved treatment of hypertension, or other determinants of high blood pressure—even an increased death rate of those with higher blood pressure might lead to a masked lower prevalence of this condition. The low estimates of awareness, treatment, and control of hypertension reduce the possibility that pharmacological treatment of hypertension was a major contributor to this trend, especially in the middle-income and low-income countries in Latin America, where 8621 of 14 633 patients (58·9%) were aware of a hypertension diagnosis, 7806 of 14 633 (53·3%) were receiving treatment, but only 2934 of 7806 (37·6%) receiving medical treatment had their blood pressure controlled.[9] Moreover, before antihypertensive treatment was widely available, a study done in Glasgow University students between 1948 and 1968 showed a reduction in the prevalence of systolic blood pressure from

134·5 mm Hg in male students and 129·0 mm Hg in female students born before 1929, to 125·7 mm Hg in male students and 120·6 mm Hg in female students born after 1945.[10] Potential explanations for this trend include changes in fetal and early-life nutrition, sodium and potassium intakes, including the availability of fruits and vegetables throughout the year, alcohol use, smoking, and physical activity.[7]

Finally, understanding the drivers of this favourable trend in blood pressure is important because doing so might help to redirect preventive strategies. At the same time, combining these strategies with those directed towards obesity and diabetes control is crucial.

Fernando Lanas, Pamela Seron
Facultad de Medicina, Universidad de La Frontera, Temuco 4780000, Chile
lanastomas@gmail.com

We declare no competing interests.

1 NCD Risk Factor Collaboration (NCD-RisC)—Americas Working Group. Trends in cardiometabolic risk factors in the Americas between 1980 and 2014: a pooled analysis of population-based surveys. *Lancet Glob Health* 2020; **8:** e123–33.
2 Lanas F, Serón P, Lanas A. Cardiovascular disease in Latin America: the growing epidemic. *Prog Cardiovasc Dis* 2014; **57:** 262–68.
3 Lanas F, Avezum A, Bautista LE, et al. Risk factors for acute myocardial infarction in Latin America: the INTERHEART Latin American study. *Circulation* 2007; **115:** 1067–74.
4 O'Donnell MJ, Chin SL, Rangarajan S, et al. Global and regional effects of potentially modifiable risk factors associated with acute stroke in 32 countries (INTERSTROKE): a case-control study. *Lancet* 2016; **388:** 761–75.
5 NCD Risk Factor Collaboration (NCD-RisC). Trends in adult body-mass index in 200 countries from 1975 to 2014: a pooled analysis of 1698 population-based measurement studies with 19·2 million participants. *Lancet* 2016; **387:** 1377–96.
6 NCD Risk Factor Collaboration (NCD-RisC). Worldwide trends in diabetes since 1980: a pooled analysis of 751 population-based studies with 4·4 million participants. *Lancet* 2016; **387:** 1513–30.
7 NCD Risk Factor Collaboration (NCD-RisC). Worldwide trends in blood pressure from 1975 to 2015: a pooled analysis of 1479 population-based measurement studies with 19·1 million participants. *Lancet* 2017; **389:** 37–55.
8 Guh DP, Zhang W, Bansback N, et al. The incidence of comorbidities related to obesity and overweight: a systematic review and meta-analysis. *BMC Public Health* 2009; **9:** 88–107.
9 Lamelas P, Diaz R, Orlandini A, et al. Prevalence, awareness, treatment and control of hypertension in rural and urban communities in Latin American countries. *J Hypertens* 2019; **37:** 1813–21.
10 McCarron P, Okasha M, McEwen J, Smith GD. Changes in blood pressure among students attending Glasgow University between 1948 and 1968: analyses of cross sectional surveys. *BMJ* 2001; **322:** 885–89.