EDITORIAL

Relationship between Social Factors and Cardiovascular Diseases

Claudio Tinoco Mesquita

Universidade Federal Fluminense, Niterói, RJ – Brazil

"It's a recession when your neighbor loses his job; it's a depression when you lose your own."
– Harry Truman

For decades, western countries have witnessed cardiovascular diseases leading the statistics for cause of death. In Brazil, diseases of the circulatory system (DCS) represent a major cause of death, accounting, in 2011, for 28.6% of all mortality causes.[1]

In a multinational endeavor, the reduction in the risk of premature death due to cardiovascular diseases has been defined as a United Nations Organization sustainable development goal for 2030.[2] Although DCS are the major cause of death worldwide, industrialized countries have shown a decline in death due to DCS. This reduction in cardiovascular mortality has also occurred in Brazil. Mansur & Favarato[3] have shown that significant and constant reduction from 1980 to 2012, probably secondary to the easier diagnosis and treatment of systemic arterial hypertension, the main cardiovascular risk factor. Of the several actions that contributed to decrease cardiovascular mortality, the following stand out: cardiovascular prevention with better control of risk factors; access to new drugs to manage dyslipidemia and prevent myocardial infarction, such as aspirin; fighting smoking and sedentary lifestyle; and the most effective treatment of cardiovascular diseases already established, cardiovascular surgeries and percutaneous procedures.[2]

In this issue of the *International Journal of Cardiovascular Sciences*, Soares et al.[4] report on relevant and innovative data in cardiology: the relationship of cardiovascular mortality with macroeconomics indicators. Correlating gross domestic product per capita (GDPpc) data from several municipalities of the Rio de Janeiro state in recent decades with the reduction in mortality due to DCS, those authors have reported that the decline in mortality has been preceded by a GDPpc elevation, with a strong correlation between that indicator and the mortality rates. Those authors have concluded that the GDPpc variation associated strongly with the decline in mortality due to DCS.[4]

Although relevant, the association between social factors and cardiovascular diseases has been little studied. In 2015, the American Heart Association published a document aimed at raising awareness about the influence of social factors on the incidence, treatment and outcomes of cardiovascular diseases.[5] The World Health Organization defines the social components of health as "the circumstances under which individuals are born, grow, live, work and age, in addition to the systems used to cope with diseases". Of the several social factors related to cardiovascular diseases, education stands out, and studies have shown that individuals with lower educational levels have greater prevalence of cardiovascular risk factors, higher incidence of cardiovascular events and higher cardiovascular mortality rate regardless of other demographic factors.[5] A lower educational level is associated with several risk factors, such as higher sedentary lifestyle rates.[6] Other studies have pointed to the combination of emotional stress and low socioeconomic status in patients experiencing an episode of acute coronary syndrome as a determinant of greater vulnerability to subsequent anxiety and depression, factors associated with worse prognosis.[7] Andrade et al.[8] have reported that certain social factors, such as the number of elderly people, the illiteracy rate and the human development index,

Keywords

Cardiovascular Diseases / mortality; Cardiovascular Diseases / epidemiology; Cardiovascular Diseases / prevention and control; Myocardial Ischemia; Risk Factors; Socioeconomic Factors.

Mailing Address: Claudio Tinoco Mesquita
Professor da Universidade Federal Fluminense. Programa de Pós-Graduação em Ciências Cardiovasculares. Hospital Universitário Antonio Pedro.
Av. Marquês do Paraná 303, Centro, Niterói, RJ – Brazil
E-mail: claudiotinocomesquita@id.uff.br

DOI: 10.5935/2359-4802.20180007

contribute to mortality due to ischemic heart disease in Brazil. Those authors have found an inverse relationship between GDP and cardiovascular mortality, as well as a lower cardiovascular mortality rate in the most populous cities, which might have more resources to cope with acute complications of ischemic heart disease. It is worth noting that those authors have found a relationship of cardiovascular mortality with the distance between the patients' household and the healthcare centers, indicating that patients living on the periphery of larger cities have higher cardiovascular complication rates.[8]

Figure 1 shows worrisome data by illustrating the behavior of GDP in Brazil in recent decades. After a variable period of GDP growth, Brazil faced two consecutive years of GDP reduction, and the Rio de Janeiro state was particularly affected from the social viewpoint, with regression in several social development indicators, consequent to the significant crisis in the oil sector. Such data added to the increase in obesity and in the prevalence of diabetes in Brazil might have accounted for the interruption in the decline in cardiovascular mortality reported by Mansur & Favarato[3] since 2010 in Brazil, contributing to the unprecedented increase in cardiovascular mortality after years of progressive drops. In the United States, a similar phenomenon has been recently observed and has raised adverse expectations regarding the cardiovascular mortality decline trajectory.[9] We congratulate the authors on their study that evidences the importance of improving the population's life conditions to reduce cardiovascular mortality. Public health managers should strive not to miss any opportunity in that area.

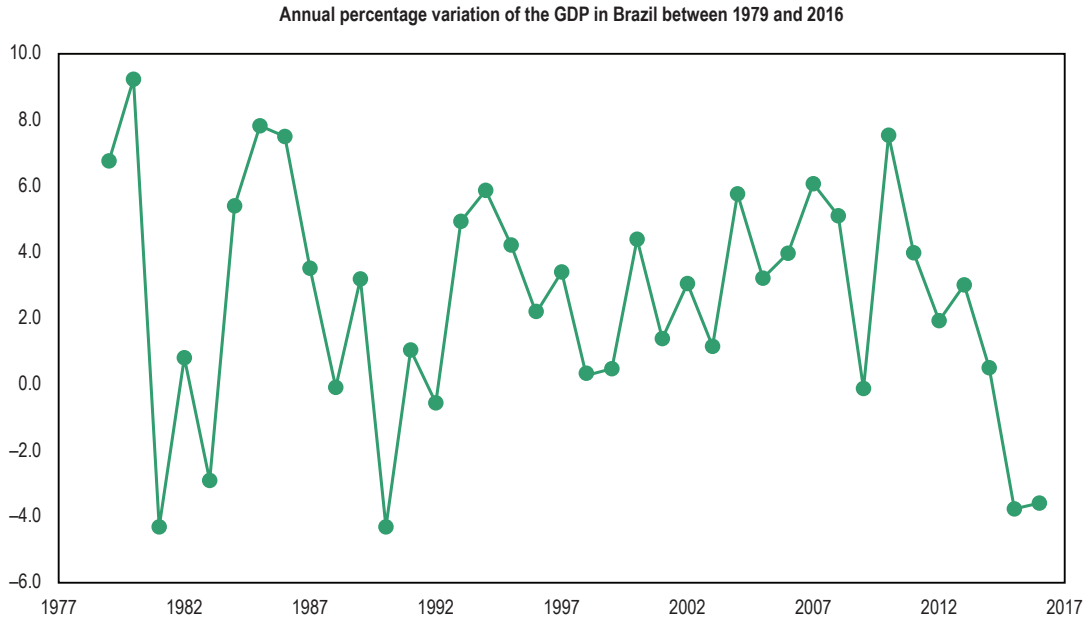

Figure 1 – *Annual percentage variation of the gross domestic product (GDP) in Brazil between 1979 and 2016. Source: Fundação Getúlio Vargas - National Account Center - several publications from 1947 to 1989; IBGE. Research Executive Board. National Account Coordination. https://agenciadenoticias.ibge.gov.br (accessed on February 19, 2018).*

References

1. Soares GP, Brum JD, Oliveira GM, Klein CH, Souza e Silva NA. Evolution of socioeconomic indicators and cardiovascular mortality in three Brazilian states. Arq Bras Cardiol. 2013;100(2):147-56.
2. Mesquita CT, Leão M. Cardiology and sustainable development. Int J Cardiovasc Sci. 2018;31(1):1-3.
3. Mansur Ade P, Favarato D. Trends in mortality rate from cardiovascular disease in Brazil, 1980-2012. Arq Bras Cardiol. 2016;107(1):20-5.
4. Soares GP, Klein CH, Souza e Silva NA. Evolution of mortality from diseases of the circulatory system and of gross domestic product per capita in the Rio de Janeiro State Municipalities. Int J Cardiovasc Sci. 2018. [in press].
5. Havranek EP, Mujahid MS, Barr DA, Blair IV, Cohen MS, Cruz-Flores S, et al; American Heart Association Council on Quality of Care and Outcomes Research, Council on Epidemiology and Prevention, Council on Cardiovascular and Stroke Nursing, Council on Lifestyle and Cardiometabolic Health, and Stroke Council. Social determinants of risk and outcomes for cardiovascular disease: a scientific statement from the American Heart Association. Circulation. 2015;132(9):873-98.
6. Teresa A, Carvalho G, Duarte TF, Maiochi AS, Leo R, Moreira DM. Correlation between physical activity and clinical variables in patients with acute myocardial infarction. Int J Cardiovasc Sci. 2018;31(1):22-5.
7. Steptoe A, Molloy GJ, Messerly-Bürgy N, Wikman A, Randall G, Perkins-Porras L, et al. Emotional triggering and low socio-economic status as determinants of depression following acute coronary syndrome. Psychol Med. 2011;41(9):1857-66.
8. de Andrade L, Zanini V, Batilana AP, de Carvalho EC, Pietrobon R, Nihei OK, et al. Regional Disparities in Mortality after Ischemic Heart Disease in a Brazilian State from 2006 to 2010. PLoS One. 2013;8(3):e59363.
9. Sidney S, Quesenberry CP Jr, Jaffe MG, Sorel M, Nguyen-Huynh MN, Kushi LH, et al. Recent trends in cardiovascular mortality in the United States and public health goals. JAMA Cardiol. 2016;1(5):594-9.