



RESEARCH NEWS

Half of US cardiovascular deaths are due to modifiable risk factors, study finds

Michael McCarthy

Seattle

If the five commonest modifiable risk factors for cardiovascular disease—high cholesterol concentrations, diabetes, hypertension, obesity, and smoking—were eliminated in the United States, deaths from cardiovascular disease would be halved, a new study in the *Annals of Internal Medicine* has found.¹ Cardiovascular diseases such as coronary heart disease and stroke are the leading cause of death in the US, accounting for more than 780 000 deaths in 2010.

In the cross sectional and cohort study, Shivani Patel, a postdoctoral fellow at Hubert Rollins School of Public Health at Emory University in Atlanta, Georgia, and colleagues estimated what fraction of cardiovascular deaths would be prevented in 2009 to 2010 under two scenarios: first, the complete elimination of the five most common modifiable risk factors and, second, a national reduction of risk factors to the best levels achieved by any state.

“Although elimination of risk factors is the conventional target used in studies of preventable mortality, we also considered the best achieved levels in US states to provide a more realistic assessment of decreases in mortality that could be leveraged through risk reduction both nationally and among states,” the researchers wrote.

Their analysis was based on data from the self reported risk factor status of 45 to 79 year old respondents gathered by the Behavioral Risk Factor Surveillance System, an ongoing nationally representative survey of health risk factors, and on relative hazard calculations that used data from the National Health and Nutrition Examination Survey linked to the National Death Index.

Elevated cholesterol was defined as a total blood cholesterol concentration of >6.21 mmol/L (≥ 240 mg/dL) or use of relevant treatment; diabetes as a measured HbA_{1c} concentration of >6.5% or use of treatment; hypertension as a measured average systolic

blood pressure of >140 mm Hg and a diastolic blood pressure of >90 mm Hg or use of treatment; obesity as a body mass index >30; and current smoking as report of being a current smoker or measured serum cotinine concentration >56.8 nmol/L, with former smoking as smoking >100 cigarettes during the participant’s lifetime but not currently smoking.

The researchers found that if all five modifiable risk factors were eliminated, 54.0% of cardiovascular deaths would be eliminated among men and 49.6% of cardiovascular deaths among women. Elimination of hypertension and smoking would individually have the biggest effect: elimination of hypertension alone would prevent 30.4% of cardiovascular deaths among men and 38.0% among women, the researchers calculated. Elimination of smoking alone would prevent 36.4% of cardiovascular deaths among men and 17.4% among women. On the other hand, if all the states met the “best achieved levels” among the states, defined as the mean prevalence in the five states with the lowest levels of each risk factor in 2010, the reduction in cardiovascular deaths was far less. In that case less than 10% of cardiovascular deaths would be prevented, the researchers found.

The researchers concluded, “In summary, despite progress in the reduction of cardiovascular mortality over the past 6 decades, modifiable cardiovascular risk factors continue to be associated with half of the burden of cardiovascular mortality at the national and state levels, and the best achieved levels are far from the theoretical minimum.”

1 Patel SA, Winkel M, Ali MK, Venkat Narayan KM, Mehta NK. Cardiovascular mortality associated with 5 leading risk factors: national and state preventable fractions estimated from survey data. *Ann Intern Med* 30 Jun 2015, doi:10.7326/M14-1753.

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