The Preventable Causes of Death in the United States: Comparative Risk Assessment of Dietary, Lifestyle, and Metabolic Risk Factors

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This article has 107 references.

FROM ABSTRACT:

Background
Our aim was to estimate the mortality effects of the following 12 modifiable dietary, lifestyle, and metabolic risk factors in the United States (US) using consistent and comparable methods: high blood glucose, low-density lipoprotein (LDL) cholesterol, and blood pressure; overweight–obesity; high dietary trans fatty acids and salt; low dietary polyunsaturated fatty acids, omega-3 fatty acids (seafood), and fruits and vegetables; physical inactivity; alcohol use; and tobacco smoking.

Findings: US deaths from risk factors, 2005
Tobacco smoking 467,000
High blood pressure 395,000
Overweight–obesity 216,000
Physical inactivity 191,000
High dietary salt 102,000
Low dietary omega-3 fatty acids 84,000
High dietary trans fatty acids 82,000
Alcohol use 64,000

Although 26,000 deaths from ischemic heart disease, ischemic stroke, and diabetes were averted by current alcohol use, they were outweighed by 90,000 deaths from other cardiovascular diseases, cancers, liver cirrhosis, pancreatitis, alcohol use disorders, road traffic and other injuries, and violence.

Conclusions
Smoking and high blood pressure, which both have effective interventions, are responsible for the largest number of deaths in the US. Other dietary, lifestyle, and metabolic risk factors for chronic diseases also cause a substantial number of deaths in the US.

THESE AUTHORS ALSO NOTE:

“A number of modifiable factors are responsible for many premature or preventable deaths. For example, being overweight or obese shortens life expectancy,
while half of all long-term tobacco smokers in Western populations will die prematurely from a disease directly related to smoking.”

“It should be possible to reduce preventable deaths by changing modifiable risk factors through introducing public health policies, programs and regulations that reduce exposures to these risk factors.”

In this new study, the researchers estimate the number of deaths due to 12 different modifiable dietary, lifestyle, and metabolic risk factors for the United States population.

The researchers extracted data on exposures to these 12 selected risk factors from US national health surveys, and they obtained information on deaths from different diseases for 2005 from the US National Center for Health Statistics. They used previously published studies to estimate how much each risk factor increases the risk of death from each disease.

“Of the 2.5 million US deaths in 2005, they estimate that nearly half a million were associated with tobacco smoking and about 400,000 were associated with high blood pressure.” These two risk factors therefore each accounted for about 1 in 5 deaths in US adults.”

“Overweight–obesity and physical inactivity were each responsible for nearly 1 in 10 deaths.”

“Among the dietary factors examined, high dietary salt intake had the largest effect, being responsible for 4% of deaths in adults.”

“Finally, while alcohol use prevented 26,000 deaths from ischemic heart disease, ischemic stroke, and diabetes, the researchers estimate that it caused 90,000 deaths from other types of cardiovascular diseases, other medical conditions, and road traffic accidents and violence.”

“The standard death certificate is valuable for assigning deaths to specific diseases or injuries, but does not provide information on the modifiable risk factors that cause these diseases.”

The results of this study are “the most comprehensive and comparable quantitative assessment of the mortality burden of important modifiable risk factors in the US population, and the only one to include the effects of multiple dietary and metabolic factors.”

“The mortality-reducing effects of omega-3 fatty acids and of replacing saturated fatty acids (SFA) with polyunsaturated fatty acids (PUFA) have been confirmed in randomized trials.” [IMPORTANT]
RESULTS
In the year 2005:

2,448,017 US residents died

96% percent of all deaths in the US were in people ≥30 y of age

The four most common causes of death were:

<table>
<thead>
<tr>
<th>Cause</th>
<th>Deaths</th>
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<tbody>
<tr>
<td>Ischemic heart disease</td>
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“The single largest risk factor for cardiovascular mortality in the US was high blood pressure, responsible for an estimated 395,000 cardiovascular deaths (45% of all cardiovascular deaths), followed by overweight–obesity, physical inactivity, high LDL cholesterol, smoking, high dietary salt, high dietary trans fatty acids, and low dietary omega-3 fatty acids.”

“Smoking had the largest effect on cancer mortality compared with any other risk factor, causing an estimated 190,000 (184,000–194,000) or 33% of all cancer deaths.”

“40% or more of all deaths attributable to high LDL cholesterol, overweight–obesity, high dietary trans fatty acids, low dietary PUFA and omega-3 fatty acids, low intake of fruits and vegetables, alcohol use, and smoking occurred before 70 years of age.”

“Smoking was by far the leading cause of death in both men and women ≤70 years, followed by overweight–obesity.”

“Twenty-nine percent of the chronic disease mortality effects of alcohol use occurred among heavy drinkers (i.e., men who consumed more than 60 grams of pure alcohol or 4 drinks per day and women who consumed more than 40 grams per day); this group did not have any mortality benefits from alcohol use. In contrast, in those who had light alcohol consumption (up to 40 g per day for men and 20 g per day for women), the protective effects on ischemic heart disease and diabetes mortality were larger than the hazardous effects from other chronic diseases, leading to an overall reduction in mortality in this group.”

One hour of vigorous physical activity per day would prevent 62,000 deaths per year compared to doing only 20 min of moderate activity every day.

“If the entire adult US population had light alcohol consumption, a total of 12,000 cardiovascular deaths would be prevented, largely among adults aged ≥45 y.”
However, this level of alcohol consumption would also cause an estimated 8,000 deaths due to road traffic accidents largely among adults aged <30 y.”

DISCUSSION:

“Our analysis of the mortality effects of major dietary, lifestyle, and metabolic risk factors in the US using comparable methods showed that tobacco smoking and high blood pressure were the leading risk factors for mortality, responsible for nearly one in five and one in six deaths in US adults, respectively.”

This is the “first population-level analysis of the mortality effects of risk factors to include a relatively large number of dietary and metabolic risk factors, and to use consistent and comparable methods.”

“The results of our analysis of dietary, lifestyle, and metabolic risk factors show that targeting a handful of risk factors has large potential to reduce mortality in the US, substantially more than the currently estimated 18,000 deaths averted annually by providing universal health insurance.”

IMPORTANT POINT FROM DAN MURPHY

Apparently, of the 12 modifiable dietary, lifestyle, and metabolic mortality risk factors evaluated in this study, 4 were so low that they were not listed in the final analysis: High blood glucose Low-density lipoprotein (LDL) cholesterol levels Fruits and vegetables intake Low dietary polyunsaturated fatty acids

KEY POINTS FROM DAN MURPHY

1) The results of this study are “the most comprehensive and comparable quantitative assessment of the mortality burden of important modifiable risk factors in the US population, and the only one to include the effects of multiple dietary and metabolic factors.”

2) “A number of modifiable factors are responsible for many premature or preventable deaths. For example, being overweight or obese shortens life expectancy, while half of all long-term tobacco smokers in Western populations will die prematurely from a disease directly related to smoking.”

3) “Of the 2.5 million US deaths in 2005, they estimate that nearly half a million were associated with tobacco smoking and about 400,000 were associated with high blood pressure.” These two risk factors therefore each accounted for about 1 in 5 deaths in US adults.”

4) “Overweight–obesity and physical inactivity were each responsible for nearly 1 in 10 deaths.”
5) “Among the dietary factors examined, high dietary salt intake had the largest effect, being responsible for 4% of deaths in adults.”

6) Findings: US deaths from risk factors, 2005

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Although 26,000 deaths from ischemic heart disease, ischemic stroke, and diabetes were averted by current alcohol use, they were outweighed by 90,000 deaths from other cardiovascular diseases, cancers, liver cirrhosis, pancreatitis, alcohol use disorders, road traffic and other injuries, and violence.

7) “The mortality-reducing effects of omega-3 fatty acids and of replacing saturated fatty acids (SFA) with polyunsaturated fatty acids (PUFA) have been confirmed in randomized trials.” [IMPORTANT]

8) In the year 2005, 2,448,017 US residents died
A) 96% percent of all deaths in the US were in people ≥30 y of age

9) The four most common causes of death were:

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10) “The single largest risk factor for cardiovascular mortality in the US was high blood pressure, responsible for an estimated 395,000 cardiovascular deaths (45% of all cardiovascular deaths), followed by overweight–obesity, physical inactivity, high LDL cholesterol, smoking, high dietary salt, high dietary trans fatty acids, and low dietary omega-3 fatty acids.”
11) “Smoking had the largest effect on cancer mortality compared with any other risk factor, causing an estimated 190,000 (184,000–194,000) or 33% of all cancer deaths.”

12) “40% or more of all deaths attributable to high LDL cholesterol, overweight–obesity, high dietary trans fatty acids, low dietary PUFA and omega-3 fatty acids, low intake of fruits and vegetables, alcohol use, and smoking occurred before 70 years of age.”

13) “Smoking was by far the leading cause of death in both men and women ≤70 years, followed by overweight–obesity.”

14) “29% of the chronic disease mortality effects of alcohol use occurred among heavy drinkers (i.e., men who consumed more than 60 grams of pure alcohol or 4 drinks per day and women who consumed more than 40 grams per day); this group did not have any mortality benefits from alcohol use. In contrast, in those who had light alcohol consumption (up to 40 g per day for men and 20 g per day for women), the protective effects on ischemic heart disease and diabetes mortality were larger than the hazardous effects from other chronic diseases, leading to an overall reduction in mortality in this group.”

[As long as one does not drink and drive a vehicle, 2 alcoholic drinks per day for men and 1 alcoholic drink per day for women reduces their chance of death; however any more than that and alcohol increases death].

15) “If the entire adult US population had light alcohol consumption, a total of 12,000 cardiovascular deaths would be prevented, largely among adults aged ≥45 y. However, this level of alcohol consumption would also cause an estimated 8,000 deaths due to road traffic accidents largely among adults aged <30 y.”

16) One hour of vigorous physical activity per day would prevent 62,000 deaths per year compared to doing only 20 min of moderate activity every day.

17) “The results of our analysis of dietary, lifestyle, and metabolic risk factors show that targeting a handful of risk factors has large potential to reduce mortality in the US, substantially more than the currently estimated 18,000 deaths averted annually by providing universal health insurance.”

THE RULES FROM DAN MURPHY:

Do Not smoke
Exercise vigorously for 1 hour every day
Do Not consume trans fatty acids
Do Not add salt to your food, and Do Not consume high salt foods
Take your omega-3s every day
Do Not drink much alcohol, never more than 1/day for women and 2/day for men
Watch your weight