

Indians and stroke

Conflicting reports have been published on stroke rates among Indians living abroad, with most countries—Canada, for example—reporting no higher rates. However, the stroke rates among Indians in Singapore are similar to those of the Chinese, who are known to have the highest rates of stroke. Data from the UK also show that stroke rates for Indians are very high and fall between the rates for whites and blacks. This is not surprising since heart disease and stroke share common risk factors.

KEY • POINTS • IN • A • NUTSHELL

- ♥ The rate of heart disease among Indians is two to four times higher than people of other ethnic origin.
- ♥ Evidence from multiple countries and regions of the world consistently shows that Indians have the highest or among the highest rates of heart disease, regardless of their religion, gender, or socioeconomic background.
- ♥ High rates of heart disease have been observed among Indians living in the US, Canada, Singapore, the UK, South Africa, Middle East, Trinidad, Mauritius, Fiji, Kenya, and many other countries.
- ♥ Since the environment in each of these countries is the same for Indians as for other populations who live there, the variation must be attributable either to genetics or to differences in lifestyle, activity level, body weight, and diet.
- ♥ Vegetarian and non-vegetarian Indians have similarly high rates of heart disease.
- ♥ Stroke rates have been reported to be high among Indians in the UK and Singapore, but not especially high in other countries.

1.3 ► An Epidemic on the Indian Subcontinent

In the preceding section, we saw that in numerous countries around the world, Indian immigrants have either the highest, or close to the highest, rates of heart disease of any ethnic group—regardless of their gender, religious practice, social class, or economic status. But what about Indians “at home”? This section examines heart disease on the Indian subcontinent itself, home to approximately 1.5 billion people—a billion in India, half a billion in Bangladesh, Pakistan, and Sri Lanka.

Heart disease has often been considered an “affluent person’s disease”—an illness associated with easy living, a sedentary lifestyle, and a high-calorie diet rich in cakes, prime-cut meats, and other fattening foods. People in developing countries, who tend to live hardy, frugal lives, are thought to have a low susceptibility to the cardiovascular illnesses of the rich. Africans, for example, have little heart disease.

By 2020, according to the WHO the number of Indian citizens dying each year from heart disease will exceed 2.4 million, more than twice the number in 1990. One of every four cardiac patients in the world will be Indian.

But not so with Indians. Researchers are discovering that heart disease rates on the Indian subcontinent have all but caught up with the high rates observed among Indians living abroad. For example, a major study found that the prevalence of heart disease in New Delhi and Chennai, both in India, was 10% and 11% respectively—slightly higher than the 10% rate among the Indian participants in the American-based CADI Study (*see the preceding section*). Over the past three decades, heart disease rates in the nation of India have **doubled** in rural areas and **tripled** in urban areas. In Bangladesh, Pakistan, and Sri Lanka, the rates are similar to India’s, with urban

In the past three decades, heart disease rates have doubled in rural areas of India, and tripled in its urban areas.

areas generally showing double the rates in rural areas. There is, in short, an epidemic of heart disease currently sweeping the Indian subcontinent.

Although national or regional data are generally unavailable on the incidence and mortality rates of diseases in India, there are telling indications from individual studies. For example, at Christian Medical College Hospital in Vellore, a major tertiary medical center, heart disease rates have steadily and dramatically increased over three decades—from 4% of all medical admissions in 1960, to about 33% in 1989. Studies from other parts of India also suggest an epidemic is underway. The World Health Organization estimates that, in 1990, 1.2 million Indians died from heart disease and predicts that this number will *more than double* by 2020, giving India the greatest cardiovascular disease burden of any nation by that year. In the same 30-year period, the death rate from heart disease will rise by just 15% in the US. By 2010, the WHO states, 100 million Indians will have heart disease. In fact, *more than 25%* of all cardiac patients in the world will be Indian.

By comparison, 13 million Americans, out of about 296 million, are currently estimated to have heart disease—a proportion only half that of the estimate among Indians. If the comparison looks even worse when age-adjusted: a much larger proportion of Indians who have heart disease are younger than 70. By contrast, many of the 13 million Americans with heart disease are well past retirement age, which is when one would expect more people to have heart disease.

Rural versus Urban

Equally disturbing is the trend pattern created by modernization: Despite higher rates of smoking in rural India, the heart disease rate among rural dwellers is about half that among urban Indians. City-dwelling Indians have traded in the cleaner air, lower-fat diet, and natural physical exercise of rural areas for an urban life marked by greater pollution, richer food, sedentary desk jobs, and home lives spent in front of the TV. In the last three decades, heart disease rates in urban India, particularly in south India, have risen by more than three times, from 3% to 11%. The state of

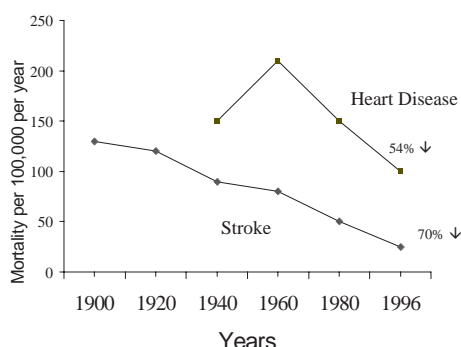


Figure 1.16. Age-adjusted death rates per 100,000 per year for heart disease and stroke in the US, from 1900 to 1996. Mortality rates have declined substantially for both stroke and heart disease because of a nationwide decrease in risk factor levels and improvements in treatment. The same is not true in many developing countries, as Figure 1.17. Source: CDC 1999.

Heart Disease in Bangladesh, Pakistan and Sri Lanka

Data show that heart disease in Bangladesh, Pakistan and Sri Lanka is widespread, premature, and severe. A 2005 study found that one in four Pakistani adults above age 40 has heart disease. It frequently occurs as multi-vessel disease and at multiple sites along an artery, and often leads to heart attacks that strike in the absence of the usual warning signs.

It is associated with high levels of smoking, diabetes, abdominal obesity, physical inactivity, and hypertension, along with low levels of awareness about heart disease risks. Other risk factors in these countries include high levels of cholesterol, low HDL, elevated blood sugar, inadequate screening, low socioeconomic status, and an unhealthy diet marked by overconsumption of deep-fried foods and saturated fat from ghee, coconut oil, coconut milk, and coconut pulp.

Kerala, for example, has a prevalence of 13% in urban areas, compared to 7% in rural Kerala.

Some studies show that heart disease rates are highest in Sikhs and lowest in Muslims and Hindus, and that Sikhs have the highest prevalence of diabetes, obesity and hypertension, but the lowest smoking rates (reflecting a religious prohibition). A 2005 study found a high prevalence of hypertension, diabetes, obesity, particularly abdominal obesity, lipid abnormalities and metabolic syndrome in the Punjabi Bhatia community in North India. Let's turn to the other countries that make up the Indian subcontinent.

Bangladesh

Heart disease is not only widespread in Bangladesh but often premature and severe. In one study, multi-vessel disease (the severe narrowing of two or more coronary arteries) was present in 54% of people younger than 45 (average

age was 34 years) and in 74% of people older than 55 years. In addition, like Indians and Pakistanis, Bangladeshi patients with heart attacks do not have the typical symptoms of severe crushing chest pain. This absence of the usual warning signs may lead to delays in rushing the patient to the hospital.

Pakistan

As in India, a recent survey undertaken in Karachi, Pakistan, showed high levels of heart disease risk factors: hypertension (39%), obesity (52%), sedentary life style (65%), and diabetes (15%). In addition, awareness of cardiac risk factors was low. A study of medical students in Pakistan also showed a high prevalence of cardiac risk factors, such as unhealthy diet and physical inactivity, low awareness, and inadequate screening practices. The results underscore the urgent need to promote preventive knowledge and practices among medical students as well as the general population. A new generation of prevention-oriented physicians who can counsel patients would go a long way to slow down and reverse these trends.

Heart disease among the younger adults is common in Pakistan. In a study of nearly 1,000 patients who had had a first heart attack, 16% were younger than 45. Among the important predictors of premature heart disease in Pakistan were smoking, *ghee* intake, elevated levels of blood sugar, high cholesterol, low socioeconomic status, and a family history of heart disease. For the first time in a study, **parental consanguinity** (marriage between first cousins or close relatives) was found to be a strong predictor of heart disease, perhaps for genetic reasons. Intermarriage is still common in many communities and regions of India and Pakistan and may be another risk factor to be concerned about.

Sri Lanka

Between 1980 and 1988, heart disease mortality rates doubled in Sri Lanka. The prevalence of heart disease was 10%, similar to that of India. The prevalence of risk factors was also high in Sri Lanka. For example, more than half (58%) of those surveyed smoked. On average, HDL (good cholesterol) levels were also low at 38 mg/dL. Finally, more than 80% of the fat consumed in Sri Lanka is saturated fat from coconut oil, coconut milk, and coconut pulp.

Contrasting heart disease trends in the US and India

In 1968, heart disease rates were virtually identical in India and the US. As mentioned earlier, in the last 30 years, the age-adjusted heart disease mortality rate has fallen 60% in the US, and similar declines have been observed in other developed countries, such as Finland, Canada, Australia, and Japan. In sharp contrast to

Does a vegetarian diet protect Indians from heart disease as it does other ethnic groups of the world? No. It could if it were done right, but the potential effects are countered by unhealthy additions to the Indian vegetarian diet.

these declines, however, heart disease rates in India have *tripled* during this same period. Thus, within the space of a single generation, heart disease rates in India have gone from virtually identical to that of Americans to **four times higher**.

In one sense, heart disease in India appears to be following a similar developmental pattern as the sequence observed in the US, where high rates first appeared in urban and affluent populations, and only later in poorer and rural populations.

Unlike in most western countries in the past three decades, however, where death rates from heart attack have declined sharply, it remains high in India—twice what they are in the US, for instance. A study undertaken at the Christian Medical College in Vellore involving 1,320 patients admitted with full-fledged heart attacks

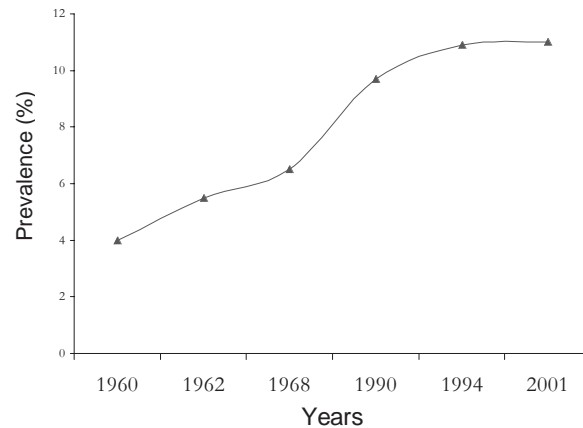


Figure 1.17 The prevalence of heart disease in India, 1960 to 2001. Note that the prevalence (meaning the percentage) of Indians who have heart disease has risen 300% over the past 40 years. Source: Krishnaswami, S. Ref.1.30. Reproduced with permission© Indian Heart Journal.

analyzed death rates among these patients during their hospital stay and within 30 days of discharge. A large fraction (83%) received lifesaving thrombolytic therapy to dissolve the offending blood clot in the coronary artery. Yet, 17% died in-hospital, double that of US hospitals (8-9%). The findings are significant because the study was undertaken at a major medical college. In small, community hospitals in India, patient care is likely to be inferior and corresponding death rates even higher.

Does a vegetarian diet protect Indians?

The short answer to this question is, not really. Unlike in other populations, vegetarianism offers little protection against heart disease among Indians because Indian vegetarians tend to avoid fish (which is highly cardioprotective when it contains omega-3 fats) and to eat a lot of saturated dairy fat, trans fats, and high glycemic carbohydrates. (For a fuller discussion of this, which I have called “contaminated vegetarianism,” see Chapter IV, Section 1, under “Common myths and misconceptions about heart disease among Indians.”) The data bear this up: Virtually no Muslim Indians are vegetarians, and at least 60% of the Hindu Indians are vegetarians. Since heart disease rates tend to be much lower among vegetarians than among non-vegetarians worldwide, one might expect the rates among the Hindus to be lower. Yet, the exact opposite is true: several studies have found that the almost entirely non-vegetarian Muslims had lower rates. Overall nearly 50% of Indians are vegetarians, but heart disease rates among them are as high as for Indian non-vegetarians.

These data underscore the general finding, when a large number of studies are examined, that heart disease rates among Indians often tend not to correlate with their levels of the standard risk factors. Low levels of conventional risk factors do not appear to shield Indians from heart disease. On the other hand, high levels of these risk factors are just as harmful to them as they are to people of other ethnicities, if not more.

Indian women

Like Indian men, Indian women the world over have very high rates of heart disease. In fact, the excess level of heart disease in Indians over that of other populations is even greater in women than in men. Chapter IV, Section 3 takes this up in greater detail.

KEY • POINTS • IN • A • NUTSHELL

- ♥ Heart disease rates continue to increase on the Indian subcontinent and are now as high there as in Indians living in other parts of the world.
- ♥ The rates are as high in Pakistan, Bangladesh, and Sri Lanka as they are in India.
- ♥ A 2005 study found that one in four Pakistani adults above age 40 has heart disease.
- ♥ Although heart disease rates were virtually identical in India and the US 30 years ago, they are currently **four times** higher in India.
- ♥ This marked difference is due to a more than 50% decrease in heart disease in the US and a more than 200% increase in India.
- ♥ In the past three decades, heart disease rates in India have **doubled** in rural areas and risen **three-fold** in urban areas. Urban rates now generally run twice as high as rural rates.