

## Impotence: More than a middle-age metaphor

More men than previously thought experience some degree of impotence, report researchers analyzing data from what they describe as the largest sex survey of the general population in 40 years.

In fact, slightly more than half of the 40- to 70-year-old men questioned had trouble getting or keeping an erection at least once in the six months preceding the interview, say John B. McKinlay of the New England Research Institute in Watertown, Mass., and his team.

To conduct the survey — part of the 1987 to 1989 Massachusetts Male Aging Study — trained interviewers went to the men's homes in the Boston area and had them fill out a questionnaire about their sexual activities. They also asked the men about their physical and mental health and drew samples of blood. Almost 1,300 men participated, 95 percent of them white, the researchers report in the January *JOURNAL OF UROLOGY*.

Earlier studies of the prevalence of impotence were smaller, aimed primarily at men with medical problems, and found lower rates of impotence than this study, says McKinlay. The Boston study did not look at the biological mechanisms responsible for impotence, as some other studies have done (SN: 7/4/92, p.10).

The researchers ranked the men as completely, moderately, or minimally impotent, based on their answers to nine questions about the frequency of their erections and sexual activities and their satisfaction with their sex lives.

The biggest factor correlated with impotence was age, even when considered apart from illness, they report. Only 5 percent of 40-year-olds reported suffering from complete impotence, but 15 percent of 70-year-olds did. While about two-thirds of the 40-year-olds reported no problems with potency, only one-third of the 70-year-olds made that claim.

As other studies have found, heart disease, diabetes, and hypertension increase a man's chances of experiencing impotence. In fact, 39 percent of heart disease patients and 15 percent of hypertension patients in the Boston study were completely impotent, compared to 9.6 percent of the entire group of volunteers. This disease-related impotence may stem from medications — but only in part, the researchers report.

The combination of heart disease and smoking cigarettes amounts almost to a prescription for impotence, they discovered. Heart patients who smoked were almost three times as likely to suffer total impotence as those who didn't smoke. Hypertensives who didn't smoke proved no more likely to experience complete impotence than others in the study.

Folklore to the contrary, testosterone concentrations failed to correlate with impotence, they report. Yet the study

provides another reason for men to improve the concentrations of high-density lipoproteins (HDL) in their blood. Men with high HDLs were less likely to report impotence than other men in the study.

Furthermore, the researchers found, the higher a man's concentration of the pituitary hormone metabolite dehydroepiandrosterone (DHEAS), the lower his risk of impotence. Other research suggests that men with high DHEAS may have a lower incidence of heart disease.

Mental well-being and personality clearly affect potency, the team says. Among men ranking high for suppressing

anger — as measured by such things as fuming — or expressing anger, about 35 percent had moderate impotence and almost 20 percent experienced complete impotence. Nearly 90 percent of the men who ranked highest on the measurement of depression reported moderate or complete impotence. Men with very dominant personalities — who, for example, attempt to control others — reported fewer potency problems than the rest of the group, the researchers report.

The prevalence of impotence makes it "a major health concern," McKinlay concludes. Impotence accounted for some 400,000 outpatient visits and 30,000 hospital visits in 1985 in the United States, they add.

— T. Adler

## Water habits on land cause oceans to swell

Sea levels around the world are currently creeping upward by a few centimeters per decade, a trend most scientists attribute to warming global temperatures that melt glacial ice and cause ocean water to expand. But don't blame warmth for everything. A team of geoscientists reports that as much as a third of the observed sea level rise stems from human activities, such as cutting down forests and pumping groundwater out of aquifers.

"The direct [human] contribution to sea level rise is much larger than previously believed, so much larger that it competes with other sources of sea-level rise," argues Dork L. Sahagian of Ohio State University in Columbus. He and his colleagues describe their research in the Jan. 6 *NATURE*.

Extraction of groundwater raises the ocean level because it takes water stored underground and transfers it to Earth's surface. Although some returns to the aquifer, much of the water — especially that used for irrigation — eventually reaches the ocean by flowing into rivers or by evaporating into the atmosphere and then raining on the seas, Sahagian says. In the same way, lake water used for irrigation in arid regions adds to ocean levels because it greatly increases evaporation, permanently transporting water away from continental interiors.

To get a rough idea of how much water comes from such activities, Sahagian and his colleagues studied withdrawal figures for large aquifers in the central United States, the southwestern United States, central California, North Africa, and the Arabian Peninsula. Judging from the rate of removal since the 1930s, the scientists calculate that water from these five aquifers adds about 0.17 cm each decade to ocean levels. That equals about one-tenth of the total sea level rise observed around the world.

The team also examined the Aral and Caspian Seas, two large, inland lakes whose levels have fallen markedly this century. Indeed, the Aral Sea has lost half

its area since 1960. The scientists calculate that using ground and surface waters from the Aral and Caspian areas adds 0.21 cm per decade to sea levels.

In an unanticipated discovery, the team found that deforestation also pumps a significant amount of water into the ocean. Either through fire or decomposition, much of the water in leveled trees escapes to the atmosphere. There, it rains down into rivers or the oceans. Deforestation in the tropics alone contributes roughly 0.14 cm per year to sea-level rise, calculate Sahagian and his colleagues.

Combining all these sources, they conclude that human actions raise sea levels about 0.5 cm each decade, roughly one-third the observed rate of increase. Because the study included only five aquifers and left out other potential sources, Sahagian considers the figure an underestimate.

Others are not so sure. Mark F. Meier, a glaciologist with the University of Colorado at Boulder, questions some of the numbers and assumptions that Sahagian's group used in their calculations. He suggests they have overestimated the effects of deforestation and groundwater withdrawal. Nonetheless, he agrees that such activities do contribute significantly to rising sea levels.

According to Meier, Antarctica and Greenland represent the biggest problems for scientists seeking to understand sea-level rise. Researchers do not know how much these regions add to ocean levels through melting. In fact, some think the ice cover on Antarctica could be growing, which would slow the rise of ocean waters.

If greenhouse-gas pollution warms the Earth, it will raise sea levels by expanding ocean water and melting mountain glaciers. However, climate experts remain unsure how Antarctica and Greenland will respond to higher temperatures. Although the warmth will hasten melting along their margins, snowfall in the interior could increase, thereby removing water from the oceans.

— R. Monastersky