Can Smoking Explain Ultimate Gender Gap?

Considerable attention has been accorded a recent study suggesting that smoking is the chief factor responsible for the gap between male and female life expectancies. Currently, women outlive men by about 7.5 years, primarily because men get heart disease earlier. A finding that smoking is the main culprit could have enormous medical, financial, and social implications.

The research was conducted by Gus Miller of Pennsylvania's Indiana University, director of Studies on Smoking in Edinboro, Pennsylvania, and Dean Gerstein of the National Research Council—National Academy of Sciences. In a retrospective study, data were obtained on smoking habits of 4394 people who died in Erie County between 1972 and 1974. Interviews on smoking habits were also conducted with 3916 county residents. Life tables were then calculated for those individuals who had never been smokers (less than 20 packs). Correcting for violent deaths (which occur more often among males), life expectancies were calculated for each 5-year age group, starting at age 30. The authors found that life expectancies for each group were virtually the same for both sexes. At age 30 to 34, for example, it was 50.9 for males and 50.6 for females. At 85 and older, it was 5 years for both groups.

The authors claim that their results, published in *Public Health Reports*, **98** (No. 4) (July–August 1983), support the conclusion that "virtually all the increase in the difference between male and female longevity since 1930 is attributable to the effects of cigarette smoking."

The authors believe that earlier studies of the male-female gap have gone astray by not weeding out the former smokers in the nonsmoking samples. They note that smoking by women has been on the increase and that "when cohorts of women who have smoked as much as men reach the later decades of life, the results of our study suggest that their lives will be shortened as much as men's and that the present differences in longevity . . . will disappear."

Few other researchers seem to think things are that simple. Ronald Wilson of the National Center for Health Statistics says the study suffers from two major methodological problems. One is that the response rates were low [data were obtained for two-thirds of the decedents and three-fourths of the "at risk" (live) group]; and overall numbers were too small. Among the decedents lost to follow-up, for example, might have been enough male nonsmokers to alter the results. He says NCHS did similar calculations in 1968 and found life expectancy for male nonsmokers at age 35 was 39.3, compared with 43.6 for women. Miller dismisses the NCHS criticisms, saying that for a population study such as this the response rates were very high. He is confident that his sample is representative of the total Erie County population.

William Castelli, director of the Framingham Heart Study, says for reliable results a population has to be followed until all of them die. "I'm afraid they're missing a lot of women because they haven't died yet," he says. But even as the data stand, they show a disproportionately high number of old women among the nonsmoking decedents. Miller says this is because nonsmoking men have suffered more from the effects of passive smoking and pollution.

Castelli notes that a study of 17,000 Seventh Day Adventists (nonsmoking vegetarians) by Loma Linda University has found that women still outlive men, by about 3 years. Miller, on the other hand, has done a geneological study of Amish farmers (nonsmoking nonvegetarians) and found that at age 40 male life expectancy exceeded that for females by a year.

William B. Kannel of Boston University agrees with Castelli that in the Erie County study 3 years is not a long enough span of time on which to base a mortality rate. "We have looked at the risk for cardiovascular mortality with regard to the constellation of predisposing factors," he says—such as blood pressure, cholesterol, glucose tolerance, and smoking—and "women maintain the advantage for any combination."

Gary D. Friedman at Kaiser-Permanente in Oakland, California, published a related study in 1979 and agrees that after correcting for all the primary risk factors an unexplained sex differential remains. In his study [*New England Journal of Medicine*, **300** (No. 5), 213 (1979)] he computed the age-adjusted mortality rates (excluding trauma) for nonsmokers at 4.13 per 1000 person-years for men and 2.17 for women. However, there were far fewer deaths in the sample than in the Miller study.

Michael Cowell at the Mutual Life Assurance Company of America says that according to his data, collected from a relatively healthy, affluent population of policyholders, female nonsmokers have an advantage. Total life expectancy for 32-year-old male nonsmokers is 76, compared with 80 for women. He "almost totally" disagrees with the conclusions of the Miller study.

However, Jeffrey Harris, an economist at the Massachusetts Institute of Technology, says he does not see the findings as "unreasonable," particularly given the fact that there have been shown to be life expectancy differentials among men of between 5 and 7 years depending on whether they smoke. Parallel comparisons between women have not been possible in the past because not only did fewer women smoke but they were lighter smokers.

It is possible then that, as some say, "Women who smoke like men are dying like men." The future may offer an opportunity to test this proposition. According to the Office of Smoking and Health, there has been a turnaround in the increase in female smoking. However, the proportion of female smokers who smoke heavily (more than 25 cigarettes a day) has increased to 33 percent.

If smoking could be proved the main culprit in the male-female life expectancy differential, it would have a major effect on auto and life insurance companies which charge higher rates for men. It could also offer impressive ammunition for two bills now pending in Congress. Following a Supreme Court decision in July (*Norris* v. *State of Arizona*) that ruled against differential payments to women in public pension plans, two bills have been introduced that would extend the principle to all pension and insurance plans. The measures (H.R.100 and S.372) are being ardently promoted by women's and civil rights groups.

But a definitive explanation of why women live longer still seems a long way off. The best guess by the experts is that, at most, smoking probably accounts for about half the difference.—**CONSTANCE HOLDEN**