Is the High Level of Obesity in the United States Related to Its Low Life Expectancy?

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According to World Health Organization estimates, men and women in the United States had a higher prevalence of obesity in 2005 than any other country in Europe, North America, or East Asia. At the same time, life expectancy in the United States has fallen below that of most other OECD countries and ranked 32nd in the world in 2008. The purpose of this paper is to identify the extent to which these two phenomena are related to one another.

We use the mortality risks associated with various detailed age/BMI categories that were developed in a large international review that synthesized data drawn primarily from North America and Western Europe. We apply these risk factors to the distribution of population by BMI in 16 countries during a recent year in order to estimate the fraction of deaths attributable to obesity, by age and sex, beginning at age 50. We recalculate life tables for these countries after removing deaths attributable to obesity to identify the extent of international variation in life expectancy that is attributable to differences in BMI distributions. We also explore the sensitivity of results to the assumed set of risks associated with overweight and to misreporting of height and weight.

Our baseline analysis uses the largest, longest, and most internationally-diverse collection of obesity risks, the Prospective Studies Collaboration (PSC). Using this set of risks, we estimate that US life expectancy at age 50 in 2006 was reduced by 1.29 years for women and 1.61 years for men as a result of obesity. This would mean that obesity explains about 38% of the longevity shortfall for US women and about 69% for US men.

We replicate our analysis using obesity risks that were recorded more recently in the United States, based on studies by Adams et al. and Mehta and Chang. Using this alternative set of risks, we estimate that US life expectancy at age 50 is reduced by obesity by between 0.6 and 0.9 years. Thus even using these lower risks, we find that differences in obesity account for a fifth to a third of the shortfall of life expectancy in the US relative to longer-lived countries.

The risk factors derived from the US studies (Adams et al and Mehta/Chang) have the advantage of pertaining to a later period, on average, than those of the PSC. The period is closer to the time when the levels of both obesity and mortality are recorded in the various countries and when attributable risks are modeled. These studies also control social class in their analyses of the impact of obesity on mortality. On the other hand, the Mehta/Chang study is small, and the Adams study is not derived from a probability sample and had a low response rate (18%). Both studies are confined to the US.
If there were a clear-cut trend in the mortality risk of obesity, there would be a strong reason to prefer estimates derived from the two most recent studies. But evidence of a trend is suggestive rather than definitive, since it has not appeared in all analyses where its presence has been investigated and it has not always been statistically significant when it has appeared. As a result, we believe that our results should be interpreted as providing a plausible range of estimates of the impact of obesity on the shortfall in American longevity. And the impact of obesity in reducing US longevity is substantial regardless of the set of risk factors employed.

The full working paper is available on our website, www.nber.org/programs/ag/rrc/books&papers.html as paper NB10-01B.

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