

**Session 2A: Effects of Obesity and Other Controllable Factors on Survival  
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The three papers in this session are most appropriately divided into two groups—the papers by Sam Gutterman and Eric Stallard on obesity, which I discuss first, and the third by Hiram Beltrán-Sánchez on the characteristics of survivors to age 65 that influence subsequent survival to extreme older ages, which I discuss last.

There have been relatively few positive or negative health and longevity shocks in human history that dramatically altered the landscape of vital statistics in either direction (Olshansky, Carnes and Mandel 2009). A few notable negative shocks include periodic rapid increases in mortality linked to infectious disease outbreaks prior to the 19<sup>th</sup> century such as those associated with cholera and bubonic plague and, of course, the Spanish flu in 1918-19 that spread across the globe with alarming speed given the absence of air travel. There has never been a positive shock to human mortality on par with the speed and breadth of the negative shocks, but rather, steady declines in early age mortality linked first to improvements in public health, and later amplified by the application of the germ theory of disease and the introduction of antibiotics. Declining middle and old-age mortality in the latter third of the 20<sup>th</sup> century was notable and somewhat unexpected but certainly not a shock to vital statistics.

The rise of adult-onset obesity in the late 20<sup>th</sup> century was an important development in global human health, but a steady diet of research articles such as those presented here and elsewhere demonstrate that this too, has not been a shock to the system—at least not yet. However, I will restate here— perhaps more strongly—what my colleagues and I have said before (Olshansky et al. 2005), and that is that while adult-onset obesity occurred relative swiftly

but so far has had only a relatively small dent in mortality, the real shock to global human health, perhaps even the biggest one on the horizon since the 1918 pandemic flu, is the rise and extremely rapid spread of childhood obesity and its attendant health and mortality consequences. The problem here is four-fold: first, the rise of childhood obesity is not slowing down as we are seeing regarding adult obesity in some parts of the world (the latter is occurring, in part, because some populations may be approaching a point of saturation); second, a series of studies have already documented the serious health consequences of obesity and type two diabetes to children, and linkages between these serious health conditions early in life and health and mortality outcomes later in life are beginning to emerge; third, acquiring obesity much earlier in life than current generations at middle and older ages appears to hold far more serious health and mortality consequences; and fourth, for many of these children, the battle against overweight and obesity has already been lost (i.e., once a body is filled with fat cells early in life, re-inflating them later, even with successful weight loss, is much more difficult to avoid).

In this context, the paper by Eric Stallard yields several interesting findings. The presence of obesity at age 50 has a dramatic negative effect on diabetes and disability, even among survivors to older ages, but it appeared to have a nonsignificant increase in mortality at older ages. Of course, it is critical to remember that the only people who survive to older ages who were obese at age 50 clearly did not have obesity as a major risk factor. Jeanne Calment smoked for nearly 100 years—clearly, smoking was not a risk factor for her, but this does not mean the vast majority of smokers, or the obese, won't die before their time. The real issue in my view is not how obesity at age 50 influences survival to age 80, but how obesity at age 10 influences survival to ages 50 and beyond—therein lies the biggest concern. The problem that all of us who

use some of the National Surveys face is the use of self-reported height and weight as the basis for body-mass index (BMI) estimates. There is much to be concerned about here, including the likelihood that most people don't know their true height, and we certainly are an extremely poor judge of our own weight and body shape. Also, we grow shorter as we age, so while someone can maintain the same weight, their BMI will rise with age because we are shorter than we think we are.

Sam Gutterman's paper is an excellent summary of the history behind the obesity epidemic and its current status. Most frightening is the latest table on prevalence of largely adult-onset obesity, showing upwards of 50 percent of blacks, a third of whites and about 40 percent of Mexican-Americans are already obese. The trend shows a nearly 50 percent increase in prevalence in self-reported obesity from 1997-2008, and it's probably worse than this in reality. The childhood obesity figures are staggering—reinforcing my view that, left unchecked, this generation of children is in trouble. Sam outlines nicely the various causes—but why should any of us be surprised at what was found. We got exactly what we wanted—cheap, high-calorie foods loaded with fat, sugar, salt and taste, at exactly the same time social and environmental conditions favored lower caloric consumption. Combine that with incorrect advice from nutritionists to focus on high carbohydrate diets, and the perfect storm ensued. The rest of Sam's paper is devoted to an exhaustive discussion of the relationship between obesity and a variety of diseases, morbidity, disability, health care costs and mortality at various ages—the most comprehensive treatment I've seen so far. I will personally be using Sam's paper as a frame of reference and source for some time to come. Although I appreciate the treatment at the end of Sam's paper on how to fix the problem, we've known how to fix obesity for many years—and it

just doesn't work. Therein lies my concern about the childhood obesity epidemic becoming the next big shock to human mortality—it makes the adult-onset research results presented here and elsewhere seem dwarfed by comparison.

The paper by Hiram and colleagues is a different animal entirely. His question is once you survive to age 65, what factors enable you to survive to ages 85 and older. I would encourage Hiram and colleagues to reverse this question and ask what factors predict early demise because it may be more instructive to learn what not to do to avoid dying early rather than relying on figuring out what some do to live longer. Absent from any part of this manuscript, unless I missed it, is a discussion of genetics, and I've argued for many years that any chance of a long life must begin with having won the genetic lottery at birth. Remember, after all, that even if everyone in the population was highly educated, wealthy, lived a stress-free life and exercised every day, they would all still grow old and die—albeit at later ages than would otherwise be the case—and cancer, heart disease and stroke would still remain the three top killer diseases, with dementia and infectious diseases not far behind. Nevertheless, what Hiram and colleagues accurately point out is the important influence of education on health and length of life. Other research, my own included, indicates that the educational gradient extends into the 16+ category, and Rick Rogers has demonstrated that further gradients exist within even this highest level of education—further widening the gap identified by Hiram in this paper, which is limited to 13+ years.

So what is my take on the combined message of these three papers? The good news is that if you're fortunate enough to be educated and slim when you're 50, and certainly lean in

your younger years, you have a decent shot at living a longer and healthier life. The problem is that the proportion of the population that falls into this narrow category is growing smaller, and we haven't even taken into account projections of what will happen to future generations of children as they reach age 50. I would encourage these researchers to model these events to see what you find. No pun intended, but I think you'll be shocked at what you find.

## References

- Olshansky, S.J., B.A. Carnes, and M.S. Mandell. 2009. "Future Trends in Human Longevity: Implications for Investments, Pensions and the Global Economy." *Pensions* 14, no. 3: 149-63.
- Olshansky, S.J., D. Passaro, R. Hershov, J. Layden, B.A. Carnes, J. Brody, L. Hayflick, R.N. Butler, D.B. Allison, and D.S. Ludwig. 2005. "A Potential Decline in Life Expectancy in the United States in the 21st Century." *New England Journal of Medicine* 352: 1103-10.