

Bacteria, economics and our aging population

February 12 2015, by Julie Flaherty

At the end of January, Simin Nikbin Meydani, director of the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts (HNRCA) and a professor at the Friedman and Sackler schools, was an invited speaker at the World Economic Forum in Davos, Switzerland.

One of the topics she spoke on was the gut microbiome—the collection of bacteria and other microbes that live in our digestive systems. She explained the role that nutrition plays in optimizing your microbiome to reduce health risks, and what happens to our microbiome as we age. She also participated in a panel discussion titled "Let food be thy medicine" as well as several events related to the challenges and opportunities the growing population of people over 65 will present in the coming years.

She spoke with Tufts Now about her presentation, what it has to do with economics, and what it was like rubbing elbows with politicians, academics and industry leaders from around the world.

Tufts Now: Is it that we have fewer of the "good" bacteria as we age? Or just fewer bacteria?

Simin Nikbin Meydani: There are not fewer, but there are different types of bacteria. There is some evidence that we have more of the harmful bacteria as we age, as well as more types of them. Overall, emerging evidence indicates that bacterial changes correlate with measures of frailty, morbidity and inflammatory responses in older adults. We also know that these changes may predict one's risk for infections, dementia, osteoporosis, and heart disease, which are all major

causes of illness and disability in older adults.

In one study conducted in Ireland, they were able to show that a significant part of the changes that occur in the microbiota with aging can be explained by diet. They compared older people living in nursing homes to older people living in the community. The differences in diet were the strongest predictor of bacterial differences. In the community, older people ate more fruits and vegetables, more fiber and less fat.

There are other studies that show if you consume more fermented food products there are changes you can expect to see in the [gut microbiota](#). Whole grains can act as prebiotics and influence the type of gut microbiota. And even the type of fat you eat has an effect. In recent studies, consuming fish oil, for example, was shown to be associated with healthy [gut bacteria](#).

This is all emerging evidence, but it is certainly very encouraging. It tells us that we need to be doing more research to find out the relationship between gut microbiota, nutrition and aging and use it to improve the quality of life for older people.

What are some of the questions we should be asking?

Should we be checking the gut bacteria of older people on a routine basis? When we set dietary requirements for older adults, we don't do that with any consideration of gut microbiota, but should that be part of the conversation?

Older adults, particularly those who are residing in [nursing homes](#), are exposed to a lot of antibiotics and drugs, and we know that can have a significant impact on your gut microbiota. So should there be special nutritional supplements to ward off the ill effects of antibiotics and some of the other drugs that older people take?

What's the connection between the microbiome and world economics?

Within the next five years, for the first time in history there are going to be more people over the age of 65 than under the age of 5. This is sure to have a significant socio-economic impact because of chronic diseases that are associated with aging, such as osteoporosis, [heart disease](#), cancer and dementia. For example, the number of cases of dementia and Alzheimer's is predicted to increase from 36 million to 115 million by 2050, and the costs associated with this are tremendous.

So if we can change the [gut microbiome](#) of an [older person](#) through new and cost-effective interventions in a way that would be optimal for health, you can see the impact it would have in terms of health-care costs.

What did you hear at the forum that inspired you?

There was a lot of emphasis on taking a holistic approach to aging, but also changing the conversation about aging from a negative to a positive—from burden to opportunity for both social and economic development.

Americans over the age of 65 will own a majority of the disposable income in the United States. They are looking for goods, but they are also looking for services; this will be a game changer. How do we design cities that are age friendly? How do we ensure easy access to healthy food and health care services for older people, and make sure that the infrastructure maximizes their full participation in the fabric of the society?

There was also a lot of discussion about participation of [older adults](#) in

the labor force, with some countries encouraging them to stay in the workforce. Singapore has an initiative where they provide a percentage of the salary of a person over 65 if the companies keep them on. They felt it not only helped the [older people](#), but it was good for the economy overall. This concept of thinking of aging positively rather than negatively is something I have always believed in; I am happy to see that it is now getting more attention.

How would you characterize Davos?

Invigorating and welcoming. Some of the best conversations I had were outside of the meetings, as I took the shuttle bus from one place to another; you never knew who you would sit next to. At one point I had Bill Gates at my back and [CNN foreign affairs journalist] Fareed Zakaria right in front of me. I was just this far from Christine Lagarde, head of the International Monetary Fund, at a dinner for world women leaders. It was very exciting to be with such interesting and intelligent people.

Provided by Tufts University

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