

It gives me great pleasure to speak at the 2019 Parliamentary LINKS Day on behalf of the University of Southampton, the NIHR Southampton Biomedical Centre and the Nutrition Society. I will speak about the role of good nutrition in promoting healthy ageing.

A boy born in England 100 years ago, in 1919, would live, on average, until he was 55 years old. In contrast a boy born in England this year can expect to live, on average, until he is 79. That remarkable increase in life expectancy at birth was driven in large part by massively improved healthcare and social care during pregnancy, childbirth and infancy that occurred in the first half of the 20th century. Better nutrition contributed to these improvements. Now let's look at the prospects of a 20-year-old woman in 1919. She could expect to live another 45 years until she was 65. Contrast that with a 20-year-old woman today who can expect to live until she is in her late 80s. That is a remarkable increase in adult year span – 25 years achieved in 100 years.

My point is simply that we are living longer. We have a longer life span, greater longevity. It is hard to define when old age begins, but the World Health Organisation uses 65 years. This threshold can be debated but that does not really matter for this discussion. Currently in the UK 18% of the population is aged over 65 years, a doubling in proportion since just 1990. With the increase in total population there are now over 11.8 million people aged over 65 years in the UK compared with about 5 million in 1990. So there is a greater proportion and a greater number of older people in the UK than ever before. At 65 they have an average of about 20 years ahead of them. Unfortunately for many, a significant part of these later years may not be spent in good health. I believe we should think about health span, the years of healthy life, not life span.

You see, ageing is associated with functional decline – decline in cognitive function, decline in heart and lung function, decline in immune function. These predispose older people to all of the common conditions of ageing – dementia, heart disease, respiratory disease, infections, and many cancers. Linked into this functional decline is a kind of structural decline most obviously seen as a loss of what we call lean mass, what you call muscle and bone. That is, older people lose their muscle and lose their bones. When this becomes apparent it is termed frailty. Frailty results in people becoming weak, less mobile and less independent. It also greatly increases the chances of falls and with falls come broken bones and with broken bones comes hospitalisation, and with hospitalisation comes well ... So age-related loss of form and function increases

disease risk, the need for GP visits, the need for hospitalisation, the need for pharmaceutical and other treatments and so on, and the need to be cared for.

This is an enormous burden on the healthcare and social systems as well as on individuals and families. What can we do to lengthen health span? We know that those who are better off, those who have been better educated and those who have had a healthier lifestyle have a longer health-span on average. A healthy diet is part of this mix. Again, we know that greater adherence to a healthy diet and to many of the individual components of such a diet like fruit, vegetables and fish, is associated with less functional decline with age and with a longer health span. So diet is pretty important. In fact frailty, the loss of lean mass, is a recognised form of malnutrition. A report on the cost malnutrition in England prepared by the NIHR Southampton Biomedical Research Centre and published in 2015 showed that malnutrition cost £15.2 billion per year or about 15% of the healthcare budget, with much of this spent on the elderly. So improving the diets of older people and finding ways to do this in all settings – in the community, in social care and in hospitals – is vital.

But I do not want you to think that increasing health span by improving the diets of older people, although vital, is the only answer. You see, maintenance of form and function with ageing is actually determined by life-long habits, among which diet is one of the most important. We acquire our form and our functional capabilities – our health – relatively early in life, in childhood, adolescence and very early adulthood. So acquisition of optimal form and function early in life is an insurance against the age-related functional decline that I described earlier. Once again, good nutrition along with other positive lifestyle attributes and a healthy environment promote development of optimal form and function. This message needs to get across: good nutrition is not just for Christmas, it is for life!!

I believe we know the foods and dietary components that are more or less healthy and we know a lot about the molecular and cellular actions of the nutrients and other chemicals found in those foods that can explain their effects on human health. Those are things that people like me do in our research laboratories and clinical trial units. We need to know more about the effects of more complex dietary patterns, of the interaction of diet with genetics and with other lifestyle and environmental exposures, about the drivers of food choice and eating behaviours, and about

how to promote favourable behaviour changes. We need to educate children, adolescents and young adults about the need to assure lifelong health and about the best ways they can build strong bones, muscles, hearts, brains, immune systems and everything else. Getting in early has an additional bonus – those individuals may act to promote their own health span but they are also the parents of the next generation, a real investment in the future.

In Southampton we have developed a LifeLab funded by our NIHR Biomedical Research Centre and by the British Heart Foundation. So far, over 10,000 teenagers from the Southampton area have visited LifeLab where they have had hands-on experience of diet and lifestyle as medicine and have spent time with our clinical and non-clinical researchers. We have evidence that this exposure at this very receptive time pays dividends in terms of attitudes to individual and family health in the short-term. Of course it is too soon to know of the long-term impact, but we are really optimistic about that. In my view, alongside the obvious need to tackle the diet-related issues of those who are already elderly, we need to adopt a life course approach to diet, lifestyle and health in order to attain the goal of increasing health span. It is achievable: we can improve health span – we can promote healthy ageing.

Thank you.