DEATH IS A fact of life. However, while some of us will live to a ripe old age and maintain relatively good health until the end, others will develop conditions that will bring about a premature end or severely impair quality of life. Genetics can only partly explain whether we are predisposed to develop health problems; what then, are the other factors that determine whether we live a long, healthy life or not?

BEL-AGE

While we are all aware of the effects our lifestyle can have on our general health, psychological factors such as stress, depression and personality traits receive less attention. However, there is increasing evidence to support the idea that our minds and bodies are inextricably linked, where the suffering of one can impact the other. With that in mind, researchers at the Montreal Heart Institute in Québec have initiated the BEL-AGE study. Led by Dr Bianca D’Antono of the Heart and Mind Laboratory, the study looks at how psychological burden can contribute to pathological ageing in individuals with and without cardiovascular disease. Although there is considerable evidence that psychological factors do contribute to cardiovascular disease morbidity and mortality, the precise mechanisms remain to be elucidated. Indeed, previous work in this area has mainly focused on the effects of psychological factors on intermediary risk for heart disease, such as elevations in blood pressure.

More recently, D’Antono and others have begun focusing on inflammatory, metabolic and autonomic processes in an attempt to shed light on these mechanisms, but according to her: “Other biological processes of importance to coronary artery disease and ageing more generally have been grossly understudied”. BEL-AGE is aiming to address this issue and will examine telomere length, cognitive functioning and the development or progression of coronary artery disease to see if there is a relationship. “We are also interested in discovering if changes in physiological/biochemical processes mediate the associations between psychological factors and premature ageing,” D’Antono explains.

Telomeres are crucial in protecting the ends of chromosomes from damage. In recent years, D’Antono has unearthed evidence that psychological factors such as stress, hostility and depression can affect telomere length and thus may contribute to the rise in mortality rates from diseases typically seen in ageing, such as coronary artery disease. BEL-AGE will therefore examine both the telomere length and psychological burden of 1,518 people at the time they enter into the study, and again four years later. The study will also collect personal data on participants’ demographics, medical history, health behaviours and social support, in addition to physiological measures, such as inflammation and metabolic syndrome. “This study has the potential to inform preventive strategies to curb pathological ageing resulting from elevations in psychological burden,” D’Antono enthuses.

SEX AND GENDER MATTER

In addition to the BEL-AGE study, D’Antono has been involved in many studies that have examined men and women’s responses to the same emotional and physiological stressors. Under this umbrella, one area that has been of particular interest is determining the metabolic costs of hostility. In 2013, she and her colleagues published a series of articles in the Journal of Psychosomatic Research and Annals of Behavioral Medicine that present the findings of a three-phase, three-year study on the relationship between metabolic burden, inflammation and hostility – defined as...
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As a baseline measurement, participants filled in a sociodemographic, medical and psychological questionnaire; provided two separate blood samples (at the beginning and end of the visit); and underwent a stress protocol involving four five-minute stressful activities: a reading task, two role-play sessions and a non-scripted debate. For 21 days after the stress protocol, participants filled in forms to describe their daily interactions of five minutes or longer, as well as their feelings during them. Finally, three years after the original measurements, 136 of the original participants were evaluated again.

D’Antono and her team made several discoveries concerning sex and gender across the course of this study. “Cross-sectional analyses revealed that both men and women who exhibited more quarrelsome behaviour in their daily social interactions had a greater metabolic burden compared to less quarrelsome individuals,” she notes. However, this is not the full story, as the mechanisms behind the increase in the participants’ metabolic burden differed between the genders, as well as with age. In men, greater parasympathetic withdrawal in response to stress was associated with this increase, while in women, it was associated with dampened autonomic responses to stress. “While hostility was associated with greater inflammatory activity in women and younger individuals, over the three-year period, men and older individuals showed the most prominent increase in inflammatory activity and oxidative stress,” D’Antono states. “We believe that mechanisms underlying the psych-morbidity link may not follow the same timeframe in men and women.”

LIFESPAN AND TIME
While many factors that influence health are the same in men and women, often the timeframe in which they occur is not and the mechanisms through which they occur can differ according to those timeframes. “We are noticing that it is not sufficient to only look at sex or gender differences,” D’Antono muses. “We need more prospective longitudinal research with samples that are sufficiently large in order to look at responses across time.” There are many reasons for this. For example, advancing age often coincides with changing circumstances – such as illness, family bereavement and decreased strength – that can prove psychologically troubling. Goals and priorities also change. D’Antono, therefore, includes representations across large age ranges in her studies to take into consideration the nature of stressors and developmental shifts that come with age.

A HOLISTIC APPROACH
Despite the long-standing definition of health as physical, mental and social wellbeing, the link between mind and body and their effects upon our health are still chronically undervalued. D’Antono’s holistic approach can contribute to a range of health benefits. “Greater attention to the psychological health of our population, and to the mechanisms by which these factors impact health, is essential if we wish to reduce adverse health outcomes and increase productivity and wellbeing,” she expands.

The type of studies required to understand these mechanisms necessitate large-scale operations, and thus are very expensive. While this is a major sticking point, especially in an environment where year on year most governments have decreased science funding, as D’Antono explains, these studies are well worth the cost: “When speaking to individuals who are healthy and active into old age, I have noticed that they generally maintained an optimistic outlook in difficult situations, participated in active living activities and continued setting goals throughout their lives”. These individuals are not only happy and healthy, but they require significantly fewer resources from the healthcare system.

D’Antono also wants to increase the recognition of psychological factors as targets for evaluation and intervention, both for those with developed health problems, and in individuals who can be kept healthy through low-cost interventions. “Stress management and anger management, for example, are easy to learn and can be practiced anywhere,” she shares. Finally, D’Antono wants to see a future rife with people who are taught to harness their psychological strengths from a young age so as to improve general wellbeing and reduce the impact of psychological burden throughout their life course.