

Research suggests a new model of chronic disease

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Credit: King's College London

Genes play a key role in determining whether someone experiences multiple chronic diseases, according to new research by King's.

Chronic pain, depression and [heart disease](#) are three of the commonest causes of disability, and are becoming more prevalent. People are also increasingly likely to suffer from more than one chronic disease, resulting in greater disability.

While age, gender, social circumstances and lifestyle are known to increase susceptibility to multiple causes of disability, the exact reason why some people suffer from several [chronic diseases](#) and others don't is unknown. A new study led by Dundee researchers and colleagues at King's College London and the University of Oxford, however, has found that genetics are also a key determinant.

They examined two major existing population cohorts (Generation Scotland and TwinsUK), for the co-occurrence of chronic pain, depression and heart disease in both individuals and in their siblings. They found that people who had one of these illnesses were much more likely to have one or both of the others. Additionally, the brothers or sisters of people with one of these illnesses were much more likely to have one of the others, even after allowing for known social and demographic factors.

Dr Frances Williams, Twin Research & Genetic Epidemiology, said: 'While the link between chronic pain and depression has been recognised for a long time, the new findings linking cardiovascular disease to the other two traits came as a surprise. These findings challenge the conventional way disease has been categorised, and suggests that new forms of treatment may be suitable for all three conditions.'

The researchers found that people with depression were two and half times more likely to experience chronic pain, while people with both depression and heart disease were nine times more likely to do so. Siblings of people with heart disease were twice as likely to have [chronic pain](#), while siblings of those with [depression](#) were twice as likely to suffer from heart disease.

Detailed modelling of data confirmed a genetic contribution to the co-occurrence of [chronic widespread pain](#) and heart disease in twins, in addition to important environmental contributions.

More information: Oliver van Hecke et al. Chronic pain, depression and cardiovascular disease linked through a shared genetic predisposition: Analysis of a family-based cohort and twin study, *PLOS ONE* (2017). [DOI: 10.1371/journal.pone.0170653](https://doi.org/10.1371/journal.pone.0170653)

Provided by King's College London

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