



Stress and heart problems

We all know stress can make us feel ill. Many people suffer headaches, stomach problems and back strain when under stress. But can stress lead to long-term health problems?

Experts in medicine and stress have argued for decades over whether stress can cause problems with the heart, and cardiovascular system, including stroke and raised blood pressure. The facts are still unclear but growing evidence does support a link between certain kinds of stress and problems with the heart.

Links between stress and heart problems

Many researchers are now convinced that stress can increase your risk of heart disease and stroke.

The Government's health white paper, *Saving Lives*, published in 1999, warns that people in stressful jobs – with either very high demands or little control over their work – are more likely to suffer heart disease. It cites a long-running study of civil servants, the Whitehall II study, which shows that women in high demand/low control jobs are more than 70% more likely to develop coronary heart disease than their counterparts in jobs with high levels of control. Men in low control jobs are more than 50% more likely to develop heart problems than men in high control jobs.

The British Heart Foundation believes that while the impact of stress on the heart disease is still uncertain, stress does seem to play a role in increasing risk. It points to research which shows that people under work strain, suffering depression or with an 'angry' personality, are more likely to develop heart problems. The charity warns that for people who already have heart disease, stress can bring on angina or even – very exceptionally – a heart attack.

The American Heart Association agrees. It says: 'More and more evidence suggests a relationship between the risk of cardiovascular disease and environmental and psychosocial factors.'

Heart attacks

Some studies have even found that stress can cause fatal heart attacks. One study, published in the *British Medical Journal* in 2000, reported that more men died of heart attacks on the day the Dutch football team was eliminated from the European football championship in 1996 than on an average day. Another study, published in the *British Medical Journal* in 1998, found that men working very long hours in Japan – more than 11 hours a day – are more prone to fatal heart attacks. However, it also found men working less than seven hours a day are more at risk than those working seven to nine hours a day.

A new book out this year, *Stress and The Heart*, brings together experts in the field to analyse all the research. This cites studies that show clear links between heart problems and certain kinds of work stress, depression, anxiety and hostility.

But not everybody is convinced. Graham MacGregor, professor in cardiovascular medicine at St George's Hospital, London, dismisses the research as flawed. He says: 'There is no evidence that stress leads to high blood pressure or to heart disease. Professor MacGregor, who chairs the Blood Pressure Association, accepts that stress may trigger a heart attack in people already suffering severe heart disease. But he does not believe research so far has conclusively proved a link between stress and developing heart problems.

So how clear is the evidence linking stress and heart problems?

Work strain and heart problems

The possibility of a link between a stressful job and heart problems was first suggested nearly 100 years ago. As heart disease became a growing problem in the west, it first increased among people in better-off social classes. This led to the idea of 'executive stress' causing heart attacks. But as heart disease began to decline in the 1970s it has fallen fastest among the better-off so that people in lower income groups are now more at risk. It is now believed that the stress involved in a job lower down the pecking order is more likely to cause heart problems.

INTENSION

Since the 1960s a number of studies have linked two types of work strain to increased heart disease. One group of studies has found that people in jobs with high demands and low control are more prone to heart problems. The other branch of research has found that people in jobs with high effort for little reward suffer more heart disease.

An analysis of several studies, reported in the book *Stress and The Heart*, has found that people in high effort/low reward jobs are between two and six times more likely to develop coronary heart disease. An overview of research on job control found links between high demands/low control and heart disease in 17 out of 25 studies. As well as the Whitehall II study of civil servants, which established the link, the phenomenon has been spotted in major studies in Germany, Sweden and Finland. The Whitehall II study found that both kinds of work stress were independently related to heart problems. People suffering both kinds of strain doubled their heart disease risk, compared to those under one type of stress, the research found.

'There is no doubt that people who occupy jobs which are repetitive, where they have little control over what they are doing, do have a higher risk of heart disease,' says Dr Eric Brunner, senior lecturer in epidemiology at University College London, who is one of the contributors to *Stress and The Heart*.

Depression and anxiety

Depression is a common side effect and end result of prolonged stress. People have always associated depression with heart problems. We even talk about being heartbroken when sad. But is there concrete evidence that depression can lead to heart disease?

Several research projects have found a link between depression and heart problems. One major study by Johns Hopkins University in the US, followed 1,190 medical students for 37 years. Results, published in *Archives of Internal Medicine* in 1998, found that being depressed doubled the chances of coronary heart disease in men. There was a similar increased risk in women, although fewer women took part in the study.

INTENSION

A UK study, published in the *British Medical Journal* in 1998, found men with depression were three times more likely to develop heart disease than those without.

Anxiety, another stress symptom, has also been linked with heart problems. Sudden traumas have even been known to trigger a fatal heart attack. Research following 1,457 men in the UK, published in the *British Medical Journal* in 1997, found that those suffering phobic anxiety were almost four times more at risk of a fatal heart attack.

Even moderate levels of worry seem to increase heart problems. A study in the journal *Circulation* in 1997 found people with mild worrying were at almost twice the average risk of heart problems while people with high levels of worry experienced more than 2.5 times the risk.

How anger may hurt your heart

Some years ago researchers linked increased risk of heart disease with a particular kind of personality. They believed that people with 'type A' personality – the driven, competitive people who are also more prone to stress – were at higher risk of heart attacks. Since then, more sophisticated studies have shown it is a particular trait of type A behaviour – hostility or anger – which appears to increase this risk. Studies assessed in the *Psychological Bulletin* in 1996 have found that hostility increases the risk not only of heart disease but almost any physical illness.

Bursts of anger may even trigger a fatal heart attack. A study reported in the journal *Circulation* in 1995 found that a bout of intense anger doubled the likelihood of having a heart attack. Hostility was also linked to raised blood pressure, which can itself lead to heart problems and stroke, in a study published in *Psychosomatic Medicine* in 1983.

Stroke and stress

There is less evidence linking stroke to stress. But a study of men in Finland published last year in *Stroke: Journal of the American Heart Association*, found for the first time that people whose blood pressure

INTENSION

rises when under stress have a greater risk of stroke. It found a 72% higher risk of stroke in men whose blood pressure rose under stress.

High blood pressure

Although we commonly warn someone under stress they may 'burst a blood vessel', there is no conclusive evidence so far showing that stress causes high blood pressure.

Professor Graham MacGregor, who chairs the Blood Pressure Association, says stress can lead to blood pressure rising temporarily but has no long-term effect. 'One hour later it is back to normal,' he says.

How stress may cause heart problems

The links between stress and heart problems are fairly convincing. So how does stress have this effect? Scientists have focussed on two possible theories. Either stress leads to unhealthy behaviour – such as smoking more, drinking to excess and exercising less – which increases risk of heart problems, or stress has its own independent biological effect on the heart.

Both mechanisms are quite plausible, according to Dr Eric Brunner, senior lecturer in epidemiology at University College, London. Experiments on monkeys have found that increased levels of the stress hormone cortisol can lead to furred-up arteries, he says. The blood-clotting protein fibrinogen may be a factor. This has been found to be raised in people with heart disease and stroke. The Whitehall II civil servants study found those with high demands/low control jobs had higher fibrinogen levels.

'It may be that fibrinogen is on this pathway between stress and the development of heart disease but we haven't proved this,' says Dr Brunner.

Look after your heart

Even if stress can cause heart problems – as studies seem to suggest – it is certainly not the biggest risk factor. Experts agree that to keep a healthy heart you should tackle the main risks. This means you should

- quit smoking
- exercise regularly
- avoid excess alcohol
- eat a healthy diet
- reduce your weight if it is above average for your height
- have your blood pressure checked and take advice if it is raised.

It also makes sense to avoid stress where possible and learn how to manage

Reading

Stress and The Heart: Psychosocial pathways to coronary heart disease edited by Stephen A Stansfeld and Michael G Marmot (BMJ Books, 2001) £30

A panel of experts analyses all the most up-to-date research linking stress and heart problems.

Stress and Your Heart £1

Available from the Coronary Prevention Group, London School of Hygiene, 2 Taviton Street, London WC1H 0BT. Tel: 020 7927 2125. Website: www.healthnet.org.uk. The charity also produces a free fact sheet similarly titled *Stress and Your Heart*.

Anger Kills: Seventeen strategies for controlling the hostility that can harm your health by Redford Williams and Virginia Williams (HarperCollins, 1998) £4.22

Discusses how to control anger and avoid stress-related health problems.

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