



# DAILY NEWS BULLETIN

LEADING HEALTH, POPULATION AND FAMILY WELFARE STORIES OF THE DAY  
Tuesday 201901015

## Genetic diseases

### **New technique can track down causes of rare genetic diseases: Study (The Tribune: 201901015)**

<https://www.tribuneindia.com/news/health/new-technique-can-track-down-causes-of-rare-genetic-diseases-study/846665.html>

Researchers have invented a new technique in genomics to track down the causes of rare genetic diseases like muscular dystrophies.

For the new technology, the researchers, including those from Scripps Research Institute in the US, applied the fact that each person inherited two copies of every gene, or alleles—one from the mother and another from the father.

In the new method, described in the journal Science, the researchers detected the activity levels of maternal and paternal alleles across the genome to determine when the activity of an allele was outside the normal range to be a plausible cause of disease.

"Adding this method to our toolkit should allow us to detect the causes of rare genetic diseases for some of the cases in which standard methods fail," said study first author Pejman Mohammadi from Scripps Research Institute.

Usually, to reveal the cause of rare genetic diseases like muscular dystrophies, the researchers said that the genes and their products from affected people and their family members were sequenced.

They added that this was done only if the disease-driving gene mutations were obvious ones resulting in either missing or severely truncated proteins.

Mohammadi said that at least half of all rare genetic diseases had more subtle causes that cannot be detected using the usual methods.

Mohammadi and his team used data on how genes coded for proteins to detect differences in the activity levels of maternal and paternal alleles.

The researchers said that many rare genetic diseases resulted from DNA mutations affecting the copy of a gene from one of the parents.

The study noted that comparing the activity of maternal and paternal alleles was a more sensitive method than comparing one person's gene activity to another's.

This, the researchers said was because any two people differ in many other complicated factors that affected gene activity, not just their genetic backgrounds.

"Even if you had an identical twin, the fact that the twin ate a burger this morning and you didn't would create differences between you in the activity levels of many genes," Mohammadi said.

The new technique—called ANEVA-DOT (analysis of expression variation—dosage outlier test)—can be used to identify a handful of genes in each individual with apparently abnormal expression levels in one allele, the study said.

"It might tell you there are 10 or 20 genes with allele activity levels that are way off, and you can then follow up to determine which of those is causing the disease—but compared with other methods, it cuts down dramatically the number of genes you have to analyze in that way," Mohammadi said.

The researchers said that they successfully detected the disease-linked genes in cases where there was already a diagnosis, and an expected major imbalance in allele activity.

Using the ANEVA-DOT technique, they also uncovered a short list of plausible disease-linked, muscle-related genes. — PTI

Slow walking speed at age 45 linked to ageing brain

## **Self-esteem in depression**

### **Can neurofeedback training increase self-esteem in depression? (Medical News Today: 201901015)**

<https://www.medicalnewstoday.com/articles/326666.php>

There is evidence that people with a history of major depression have lower connectivity between two particular brain areas when recalling feelings of guilt. Now, new research suggests that it is possible to strengthen this brain connectivity and increase self-esteem with a new type of neurofeedback training.

physician examining MRI scans

Using a functional MRI scanner, researchers have shown that neurofeedback training can increase self-esteem in those with depression.

A team of researchers from Brazil and the United Kingdom demonstrated that just one session of neurofeedback training using functional MRI (fMRI) can produce such a result.

They report the findings of the proof-of-concept study in a recent *NeuroImage: Clinical* paper.

Neurofeedback is a technique that allows people to learn how to influence their own brain activity by observing a representation of that activity in real time.

Electroencephalography (EEG) neurofeedback has been around since the 1970s. Neurofeedback using fMRI, which uses imaging to look at brain activity, is a more recent development.

Like EEG neurofeedback, fMRI neurofeedback is noninvasive, but it differs from the EEG approach in that it offers greater resolution of the brain region under observation.

Previous study examined connectivity

In an earlier study, the same team had already used fMRI to show that when people with a history of major depressive disorder (MDD) experience feelings of guilt, or "excessive self-blame," they have lower connectivity between the right anterior superior temporal (ATL) and the anterior subgenual cingulate (SCC) regions of the brain.

Connectivity between brain regions has to do with the amount of connectedness that they have in order to exchange information. In the case of the ATL and SCC, their connectivity relates to the interpretation of social behavior.

Deep brain stimulation can be effective for severe depression

Deep brain stimulation can be effective for severe depression

An 8-year study of people with deep brain stimulation implants suggests that the treatment can benefit those with severe depression.

The researchers refer to the patterns of lower connectivity between the ATL and SCC that they saw as "brain signatures."

"The brain signature of excessive self-blame was discovered in patients with [MDD] whose symptoms had remitted, suggesting it could precede the symptoms of depression, making people more vulnerable to the disorder," says lead study author Dr. Roland Zahn.

Dr. Zahn is a reader in neurocognitive bases of mood disorders at King's College London in the U.K.

He and his colleagues wished to take the previous findings a step further and address the question of whether people could use fMRI neurofeedback to alter their brain signature.

How the team conducted the study

For the study, the researchers enrolled 28 people with a history of MDD and randomly put them into two groups: an active intervention group and a control intervention group.

For reasons of safety, they chose to involve people whose MDD symptoms were in remission, so as not to risk any current depressive episode getting worse following the treatment.

Both groups could see fMRI neurofeedback of their ATL-SCC connectivity activity in real time on a color computer screen. The computer represented the level of ATL-SCC connectivity in the form of a thermometer.

During the feedback sessions, both groups recalled a memory of a situation in which they had felt guilt towards other people. They also repeated the task for feelings of indignation.

The instruction to both groups was to try and increase the level of the thermometer by changing their feelings as they recalled the event.

"The marker was a thermometer that, when filled to the top, would be a signal that the participants were doing well in the training," Dr. Zahn explains.

There were differences between the groups, however. In the intervention group, the thermometer level went up only if the ATL-SCC connectivity increased; in the control group, it only went up if the connectivity stayed the same, or stabilized.

#### Rise in ATL-SCC connectivity and self-esteem

Because the study design took the form of a double-blind trial, neither the participants nor their instructors knew whether they were in the active intervention group or the control (stabilization) group.

"The rationale for stabilization as a control intervention," write the authors, "was to provide feedback from the same brain regions as in the active group whilst being engaged in the same psychological task, which avoids differences in the psychological aspects of the intervention in both groups."

Also, such a design rules out feedback that might come from a brain region that is not relevant and "could thus create a mismatch between neurofeedback signal and psychological task," they add.

When the participants completed the thermometer task for the indignation condition, the thermometer "reinforced stabilization of the preceding degree of correlation between the ATL and SCC in both intervention groups."

This was because the outcome measure that the researchers used was the "increase in correlation between ATL and SCC fMRI signal for guilt relative to indignation."

Although both groups experienced neurofeedback for the same amount of time, the fMRI results showed that ATL-SCC connectivity only increased in the active intervention group.

In addition, from analyzing before and after responses to psychological questionnaires, the team saw an increase in self-esteem in the active intervention group but not in the control group.

#### More work before clinical use possible

In the trial, the researchers used a software called Functional Real-time Interactive Endogenous Neuromodulation and Decoding (FRIEND) that they had developed themselves.

"FRIEND is a toolbox developed for any kind of neurofeedback study using fMRI," explains corresponding study author Dr. Jorge Moll.

Dr. Moll is a research group leader in cognitive and behavioral neuroscience at the D'Or Institute for Research and Education in Rio de Janeiro, Brazil.

He says that while they devised FRIEND for the particular aspect of MDD that they investigated in the study, it is possible to adapt the software to investigate other emotions and cognitive states.

To advance the usefulness of the package, Dr. Moll and his team have made FRIEND available online for other researchers to use.

They regard the recent findings as no more than proof of concept of the method. There is still a lot of work to do, such as confirm the results with more extensive trials and longer follow-ups to prove effectiveness before the approach is available for clinical use.

"Despite fMRI time being expensive, it is not much more than other treatments, and this can potentially offer an alternative for patients who are poor responders to conventional therapies."

## **Ayushman Bharat programme**

### **Ayushman Bharat programme empowering several Indians: Modi(The Tribune: 201901015)**

Prime Minister Narendra Modi on Tuesday highlighted the progress made by the government's flagship Ayushman Bharat programme under which 50 lakh beneficiaries have been treated free of cost.

He described it as an "important milestone" towards a healthy India.

"It would make every Indian proud that in a year, over 50 lakh citizens have benefited from free-of-cost treatment, thanks to Ayushman Bharat," he tweeted.

The scheme, launched in September 2018, aims to provide health care to 10 crore poor and lower-middle-income families through a health insurance plan providing a cover of Rs 5 lakh per family.

"Apart from curing, this scheme is empowering several Indians," the Prime Minister said. PTI

## **Vitamins B-6 and B-12**

### **Vitamins B-6 and B-12 linked with increased risk of hip fracture (Medical News Today: 201901015)**

<https://www.medicalnewstoday.com/articles/326640.php>

Published TodayBy Tim Newman Fact checked by Jasmin Collier

Vitamins are essential for good health, but consuming too much of certain vitamins can be damaging. A recent study explored B vitamin intake and the risk of hip fracture.

X-ray pelvis

Consuming vitamins B-6 and B-12 in large amounts may increase the risk of hip fracture.

Vitamin and mineral supplements are becoming increasingly popular in the United States.

According to one study, 52% of U.S. adults used supplements of some kind in 2011–2012.

Although there is no doubt that some people need to take supplements, there is a growing concern that many people are taking more than they should.

As the authors of the new study explain, "Both insufficient and excess intakes of a nutrient may be harmful."

In this study, the researchers were particularly interested in vitamins B-6 and B-12. Both carry out a wide array of roles in the body and occur in a range of foods.

For many healthy people, it is fairly easy to consume adequate amounts of vitamins B-6 and B-12 from a balanced, varied diet.

B vitamins and fracture risk

Previously, the authors of the recent study published a secondary analysis using data from 6,837 people. In it, they found "an unexpected increased risk of hip fracture."

In particular, the fracture risk was highest in individuals taking both vitamins B-6 and B-12.

These diets and supplements may not really protect the heart

These diets and supplements may not really protect the heart

A large-scale analysis investigates the benefits of a range of diets and supplements.

To investigate the relationship further, the scientists delved into another, larger batch of data. They have now published their findings in the journal JAMA Network Open.

The scientists had access to data from 75,864 postmenopausal women involved in the Nurses' Health Study.

Alongside information regarding health, diet, and supplements, the researchers also had access to a wide range of other details, including the participants' recreational activities, medications, smoking status, and body mass index (BMI).

'An almost 50% increase'

During the 20 year study, there were 2,304 hip fracture cases that were not associated with cancer or major trauma, such as a vehicle accident.

As expected, the scientists saw a relationship between B vitamin supplementation and the risk of hip fracture. They write:

"The risk was highest in women with a combined high intake of both vitamins, exhibiting an almost 50% increased risk of hip fracture compared with women with a low intake of both vitamins."

However, they also explain that, "Among women in the medium intake categories for both vitamins, risk was not significantly elevated."

The scientists also note that higher levels of the B vitamins were associated with supplements, not dietary intake.

They make it clear that some people do need to take vitamin B-12 supplements, and that there is no evidence to suggest that taking B-12 alone increases the risk of hip fracture.

As the authors explain, the level of vitamin B intake necessary to increase the risk of fracture "far exceeded the recommended dietary allowances."

How do B vitamins increase fracture risk?

Exactly how vitamins B-6 and B-12 might increase fracture risk is not known. The study authors theorize that it might be associated with some of the other side effects of ingesting high levels of B-6.

For example, some experts believe that high doses of vitamin B-6 produce neurological symptoms, such as ataxia (which affects coordination), as well as decreased muscle tone. These symptoms, the authors argue, might make falls more likely and therefore increase the risk of hip fractures.

Another theory the authors outline is that high levels of vitamin B-6 may "accelerate bone loss by counteracting the modulating influence of estrogens on steroid receptors."

As for the role of vitamin B-12 in this relationship, the authors do not yet have any concrete theories.

Strengths and limitations

The primary strength of this study is that the researchers had access to detailed information from thousands of women over 2 decades. However, there are also certain limitations.

For instance, the team could not ascertain whether some women began taking vitamin B-6 and B-12 supplements because they became ill. It is possible that any hip fractures after this point were due to the illness rather than the supplements.

However, when the scientists accounted for frailty and disease in their analysis, it did not substantially alter the results.

Currently, this has been the only study to specifically investigate the interaction between vitamin B-6, vitamin B-12, and hip fractures.

Scientists will need to carry out more research to prove the relationship. With that said, the authors conclude:

"Although we acknowledge the limitations of our cohort design, the findings herein add to the body of literature that suggests caution should be used in vitamin supplementation when there is no apparent deficiency."

## **Turmeric may contain**

### **Turmeric may contain dangerous levels of lead (Medical News Today: 201901015)**

<https://www.medicalnewstoday.com/articles/326652.php>

Published Today By Amy Pashler Fact checked by Isabel Godfrey

Is the desire for brightly colored turmeric causing a dangerous phenomenon? A new report discusses how companies in Bangladesh are adding lead chromate to turmeric to make it appear more yellow.

ground turmeric and turmeric

Researchers have found high levels of toxic lead in the popular spice turmeric.

What is lead chromate, and why do people use it to color turmeric?

Lead chromate, a chemical compound comprising lead and chromium, is a yellow pigment that can enhance the brightness of a substance. It is also poisonous, acting as a neurotoxin when humans ingest or inhale it.

Experts consider lead unsafe in any quantity as it leads to cognitive defects. Usually, manufacturers use lead chromate to give yellow and orange oils and paints their color.

However, previous research has identified turmeric as a source of lead exposure across many turmeric-producing districts in Bangladesh.

Turmeric is an essential spice that many people consume daily in South Asia. It also has some medicinal uses. It may potentially treat inflammation and have healing effects across many conditions, including cancer.

Adulteration of spices is not unusual, and the addition of toxic agents to spices is common. However, the addition of lead chromate to turmeric threatens public health in Bangladesh. The researchers behind the present study wanted to assess the effect of this practice and its regulation.

The team, from Stanford Woods Institute for the Environment, California, designed the study to assess the extent of turmeric adulteration with lead chromate, a substance that authorities have banned as a food additive.

In the first instance, the researchers found that the adulteration of turmeric with lead chromate was an issue stretching back to the 1980s, when people first used it to enhance the color of turmeric that flooding had left dull.

Some members of the team had previously investigated the various potential sources of blood lead level contamination in people in Bangladesh.

They did this by looking at the different isotopes of lead, which allowed them to create a chemical signature known as a fingerprint for lead-adulterated turmeric.

Their findings, available in *Environmental Science & Technology*, showed that this was the most likely culprit for the origin of lead in people's blood, making the study the first to link lead in turmeric directly to lead levels in the blood.

What were the results of the study?

In the current study, which appears in the journal *Environmental Research*, the researchers first identified and visited the nine major turmeric-producing districts in Bangladesh (as well as two minimal ones) to assess the practice of adulterating turmeric across the supply chain. They conducted interviews with 152 workers across the production sites.

Following this, they collected samples of yellow pigments and turmeric from the most frequented wholesale markets, and they collected samples of oils and dust from turmeric polishing mills to assess evidence of adulteration.

The researchers used mass spectrometry and X-ray fluorescence to identify the lead and chromium concentrations in all 524 of the samples that they collected.

Why fish may become more toxic than ever

Why fish may become more toxic than ever

More and more fish contain dangerously high levels of the toxic substance methylmercury.

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Turmeric lead and chromium concentrations were highest in the Dhaka and Munshiganj regions (minimal turmeric producers), where the team detected a maximum concentration of 1,152 micrograms/gram ( $\mu\text{g/g}$ ), compared with 690  $\mu\text{g/g}$  in the nine major turmeric-producing districts.

They found evidence of lead chromate adulteration at seven out of nine of the major turmeric-producing districts and noted that 2–10% of yellow pigments at the polishing mills contained lead chromate.

Soil samples from these mills also had a maximum concentration of 4,257  $\mu\text{g/g}$  of lead.

The interviews confirmed how the practice of adding lead chromate to turmeric started over 30 years ago and continues today.

The consumers' desire to have bright and colorful yellow curries seems to be the primary driver of this practice. Farmers stated that turmeric merchants are able to sell poor quality roots and increase profit margins by requesting the adulteration of that poor quality turmeric with yellow pigment.

## How to limit contamination

This practice is extremely harmful to health. There was no direct evidence of contaminated turmeric beyond Bangladesh, and the researchers believe that food safety checks by importing countries encourage large scale spice processors in Bangladesh to limit the amount of lead that they add to turmeric for export.

However, the researchers say that "the current system of periodic food safety checks may catch only a fraction of the adulterated turmeric being traded worldwide."

Lead author Jenna Forsyth adds, "People are unknowingly consuming something that could cause major health issues. We know adulterated turmeric is a source of lead exposure, and we have to do something about it."

Going forward, it seems that there is a need to improve the education surrounding toxic pigments and to move consumer behavior away from eating contaminated foods.

In addition, the research team plans to develop business opportunities that reduce lead exposure.

## What is arsenic poisoning?

Arsenic poisoning is caused by the ingestion, absorption, or inhalation of dangerous amounts of arsenic, a natural semi-metallic chemical.

Dioxins are chemical compounds that are hazardous to health. They are no longer produced in the U.S. but they are everywhere around us.

## Five unusual toxic animals and their chemical weapons

We are all familiar with Earth's most toxic inhabitants, including the black widow and cobra. This article, however, explores our lesser-known poisonous and venomous residents.

## How does bisphenol A affect health?

Bisphenol A (BPA) is a chemical that is present in many products including water bottles, dental fillings, and sports equipment. BPA can imitate the body's hormones and can interfere with many bodily functions. Researchers believe that BPA may cause fertility problems and other health issues. Learn more about BPA here.

## **Exercise**

**Exercise especially important for older people with heart disease (Medical News Today: 201901015)**

<https://www.medicalnewstoday.com/articles/326642.php>

Published Sunday 13 October 2019 By Lisa Templeton Fact checked by Isabel Godfrey

It is well-known that exercise is good for cardiac health, but older adults tend to fall through the cracks when it comes to rehabilitation programs. Now, a study has shown that these individuals have the most to gain.

senior man doing press ups

New research examines the effects of exercise on older adults in physical rehabilitation.

Heart disease is the leading cause of death for both men and women in the United States, being responsible for 1 in 4 deaths. Every year, approximately 610,000 people in the U.S. die of heart disease, while about 735,000 people have a heart attack.

Adults over the age of 65 years are more likely than younger people to have heart disease because the heart changes with age. Heart disease is a significant cause of disability, according to the National Institute on Aging, who note that it affects the ability of millions of older people to be active and have a good quality of life.

Now, a new study has confirmed the benefits of exercise for both physical ability and mental health, regardless of a person's age.

In fact, older people can benefit the most. The study, which features in the Canadian Journal of Cardiology, showed that seniors gain the most physical and psychological benefits from rehabilitation programs, and yet they receive the least representation.

The reason for this may be that doctors are less likely to refer older people to rehab centers and encourage them to be physically active.

Why exercise benefits older adults

Regular exercise can slow the heart, lower blood pressure, ease stress, boost morale, and improve oxygen efficiency, as well as helping a person lose excess body weight, which can strain the heart. It can promote a quicker recovery and sometimes even reduce the need for medication.

The older the person, the higher the risk of complications, and the more quickly they will lose physical condition after a cardiac event such as a heart attack. As a result, they have so much more to gain from physical activity.

The researchers sum it up by saying: "Aging is associated with several factors, such as increased inflammation or oxidative stress, [which] predispose people to cardiovascular diseases. As a result, elderly patients are usually less fit than their younger counterparts, and deconditioning is accelerated once cardiovascular disease is established

Some people benefited more

This study set out to compare the responses of young and older people to a cardiac rehabilitation program. What sets this research apart from other studies is its focus on both the physical and psychological benefits of exercise on those over the age of 65 years.

Researchers at the Faculty of Sports Sciences at the University of Burgundy Franche-Comté in Dijon, France, examined 733 people who had received a referral to a 25 session cardiac rehab program at the Clinique Le Rosiers in Dijon over a period of nearly 3 years.

Can exercise slow down Alzheimer's?

Can exercise slow down Alzheimer's?

A new proof-of-concept study suggests that it can.

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The team divided the participants into three groups according to their age: under 65 years, 65 to 79 years, and 80 years or older. They evaluated all of the participants, both physically and psychologically, for issues such as anxiety and depression.

The scientists found that although all of the participants improved within weeks — not only in their physical ability but also psychologically — it was those who had the greatest physical impairments at the outset who benefited the most.

Exercise also proved particularly beneficial for those over the age of 65 years who were experiencing symptoms of depression.

"These improvements will surely have a great positive impact on patients' independence and quality of life and might help both clinicians and patients to realize how beneficial exercise rehabilitation can be."

Lead investigator Gaëlle Deley, Ph.D.

The researchers hope that the report will encourage clinicians to see the benefits of referri

## **Alzheimer's disease**

### **Alzheimer's disease: Brain immune cells may offer new treatment target (Medical News Today: 201901015)**

<https://www.medicalnewstoday.com/articles/326645.php>

Published Friday 11 October 2019 By Catharine Paddock Ph.D. Fact checked by Jasmin Collier

One hallmark of Alzheimer's disease is the massing of tangles of tau protein in the brain. Now, a new study in mice proposes that a type of brain immune cell called microglia drives the tissue damage that is linked to tau clumping.

Older adult alone

Could deactivating microglia be the key to treating Alzheimer's disease?

Brain scans of people with Alzheimer's disease have revealed that the brain damage that accompanies forgetfulness and confusion becomes visible soon after tau tangles start fusing into a mass.

A recent Journal of Experimental Medicine paper explains how the microglia become active as the tau clumps begin to form.

The study authors also showed that eliminating microglia greatly reduced tau-related damage in the brains of mice genetically modified to develop protein tangles.

They suggest that the findings point to a new way to delay the dementia that tau-related brain damage causes in humans.

"If you could target microglia in some specific way and prevent them from causing damage," says senior study author David M. Holtzman, a professor of neurology at the Washington University School of Medicine in St. Louis, MO, "I think that would be a really important, strategic, novel way to develop a treatment."

#### Toxic protein and destruction of brain tissue

Alzheimer's is a condition that destroys brain tissue. Although scientists are not sure exactly how this common form of dementia arises, they have two prime suspects in their sights: tau and beta-amyloid protein.

Autopsy evidence has revealed that most people develop plaques of beta-amyloid and tau tangles with age. However, those with Alzheimer's disease seem to have many more of them. In addition, these proteins tend to amass in a predictable pattern that begins in memory areas of the brain and then spreads.

#### New approach may save brain cells in neurodegenerative diseases

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A mechanism of brain cell damage in neurodegenerative conditions could be a new treatment target.

In the healthy brain, tau protein supports the function of neurons, which are the nerve cells that make up the brain's communication system. The protein stabilizes microtubules, which are structures that help neurons transport molecules and nutrients.

However, tau protein can also behave abnormally and collect in toxic clumps that disrupt and kill neurons.

This occurs not only in Alzheimer's, but also in other progressive brain conditions such as chronic traumatic encephalopathy. This is a condition that often occurs in boxers and football players following repeated head injuries.

The new study concerns the role of microglia in the tau clumping process. Microglia are immune cells that reside in the central nervous system (CNS) and guide its growth, development, and function.

#### The double edged role of microglia

In previous research, Prof. Holtzman and colleagues had already uncovered a relationship between microglia and tau that appeared to protect the CNS: They found that the immune cells have the ability to limit the formation of toxic forms of the protein.

However, what they saw also made them suspect that the relationship could be double edged.

It seemed that attempts by microglia to eliminate tau tangles in later stages of disease could harm neighboring neurons.

So, the team decided to take a closer look at the microglia-tau relationship using genetically altered mice that produce a human tau that easily forms into clumps.

These mice usually develop tau tangles at the age of 6 months and show symptoms of brain damage at around 9 months.

Some of the mice also carried a variant of the human APOE gene that increases a person's risk of developing Alzheimer's by 12-fold. The team had previously found that this variant, called APOE4, greatly increases the toxicity of tau on neurons.

When the mice reached 6 months of age, the researchers took some aside and supplemented their diet for a further 3 months with a compound that reduces microglia in the brain. They gave the rest a placebo so that they could compare the effects.

Presence of microglia vital for brain damage?

When the mice reached 9.5 months of age, the investigators examined and compared their brains. They found that the presence of microglia made a considerable difference to brain shrinkage.

Mice with tau tangles and the high risk APOE4 gene that received no microglia-depleting supplement showed severe brain shrinkage.

This result suggested that microglia need to be present for brain damage to occur.

In contrast, the absence of microglia as a result of taking the supplement led to hardly any brain shrinkage in the tangle-prone mice with the APOE4 risk gene.

In addition, their brains looked healthy and showed little evidence of toxic tau.

The team also found that tangle-prone mice with a deleted APOE gene had little brain shrinkage and showed few signs of toxic tau.

Further experiments revealed that APOE appears to trigger the microglia. Once they are active in this way, the microglia then drive the development of the toxic tau tangles that destroy brain tissue, suggest the researchers.

## Type 2 diabetes

### Type 2 diabetes: Weight regain reduces cardiovascular benefits (Medical News Today: 201901015)

<https://www.medicalnewstoday.com/articles/326625.php>

Published Friday 11 October 2019 By Maria Cohut, Ph.D. Fact checked by Isabel Godfrey

Recent studies have shown that people with type 2 diabetes who lose weight lower their risk of cardiovascular problems. But what happens if, after a time, they regain the weight they had lost?

older man checking his weight at doctors cabinet

New research warns that maintaining weight loss is crucial when it comes to reducing diabetes-associated cardiovascular risk.

Overweight and obesity are two of the top risk factors for developing type 2 diabetes, a metabolic condition in which the body is unable to process blood sugar effectively.

Once someone does develop diabetes, doctors will often suggest making dietary adjustments, not just to help keep blood sugar levels in check but also for weight loss.

The aim of this intervention is to help reduce the risk of stroke, heart disease, and other cardiovascular problems that have an association with diabetes.

Studies have confirmed that the more weight a person with diabetes loses, the more their cardiovascular risk diminishes. What happens, though, if a person regains some or all of that weight at some point?

That is the question that researchers from Tufts University in Boston, MA, and the University of Connecticut in Storrs aimed to answer in a recent study.

The study results — which appear in the Journal of the American Heart Association — suggest that maintaining weight loss is just as important as losing weight in the first place when it comes to keeping heart disease and health events, such as stroke, at bay.

Weight loss maintenance is crucial

The research team analyzed the data of 1,561 individuals with type 2 diabetes who took part in the Look AHEAD (Action for Health in Diabetes) trial. The program helped participants lose weight by forming more healthful eating habits and increasing their levels of physical activity.

The participants also received standard care for type 2 diabetes, which included information on managing this condition and targeted support.

The current trial looked at the data from participants who had an initial weight loss of at least 3% body weight as part of the 1 year intensive lifestyle intervention. They also looked at the follow-up data that Look AHEAD collected 4 years after the lifestyle intervention.

10% weight loss could send type 2 diabetes into remission

10% weight loss could send type 2 diabetes into remission

Even moderate weight loss could send type 2 diabetes into remission, a team of specialists argues.

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As part of the 3 year maintenance phase following the 1 year intervention, the participants attended monthly group meetings. They also continued to receive dietary recommendations and to participate in their physical activity program.

The researchers found that the people who had regained all or some of the weight that they had initially lost experienced a "deterioration" of the cardiovascular risk reduction that weight loss had provided.

In contrast, individuals with type 2 diabetes who had shed at least 10% of their initial body weight as part of the trial and managed to keep at least 75% of that weight off over the 4 year follow-up period maintained the cardiovascular benefits or even experienced an increase in risk reduction.

The risk factors that improved in people who lost weight and then maintained this weight loss included high density lipoprotein cholesterol (also known as "good" cholesterol), triglycerides, glucose (sugar), blood pressure, waist circumference, and overall diabetes symptom control.

"Our findings suggest that in addition to focusing on weight loss, an increased emphasis should be placed on the importance of maintaining the weight loss over the long term," says senior author Prof. Alice Lichtenstein.

"The bottom line is that maintaining the majority of the weight loss is essential to reducing cardiovascular risk."

Senior author Prof. Alice Lichtenstein

Going forward, the researchers note that it is important to keep assessing the long term effects of regaining weight following a weight loss program to understand how it affects health risk in the context of a type 2 diabetes diagnosis. They also state that it is important to focus on helping people maintain the initial weight loss to improve health outcomes.

## **Pollution**

**Explained: After a clean spell, how Delhi's air is getting worse now (The Indian Express: 201901015)**

<https://indianexpress.com/article/explained/after-a-clean-spell-how-delhis-air-is-getting-worse-now-6069058/>

The contribution from stubble burning to Delhi's air in the form of particulate matter of 2.5 micrometres (PM2.5) started around Friday, and has increased since. Its share in the overall pollution increased from 1% on Friday to 8% on Monday.

Explained: Bench strength, validity of law — why land acquisition matter is back in SC

Explained: After a clean spell, how Delhi's air is getting worse now

The capital's AQI is forecast to touch the higher end of the 'Poor' category on Tuesday at 297 — just four points less than the 'Very poor' air quality band.

As Diwali and winter approach, the air quality in Delhi has started to deteriorate. The average air quality index (AQI) moved into the 'Poor' zone on Thursday (October 10), and worsened progressively every day until Sunday — before improving marginally on Monday. The situation is not expected to get better this week.

The reason for the worsening of the air was the accumulation of pollutants after the burning of Ravan effigies on Dussehra on Tuesday, and a change in the wind direction, which brought in pollutants from Punjab and Haryana in the north-west, where the seasonal burning of crop residue is under way.

It ended a happy spell of three months, during which the air quality in the city oscillated between 'Satisfactory' and 'Moderate'. In September, the highest AQI recorded was 173, which is considered 'Moderate'; the lowest was 60, which is 'Satisfactory'. The average AQI for the whole month was 98, in the 'Satisfactory' range — this is the lowest AQI the capital has had in the month of September since 2015.

The contribution from stubble burning to Delhi's air in the form of particulate matter of 2.5 micrometres (PM2.5) started around Friday, and has increased since. Its share in the overall pollution increased from 1% on Friday to 8% on Monday.

The capital's AQI is forecast to touch the higher end of the 'Poor' category on Tuesday at 297 — just four points less than the 'Very poor' air quality band. Further deterioration could start from the fourth week of October, with the burning of firecrackers around Diwali contributing to the bad air.

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