



# DAILY NEWS BULLETIN

LEADING HEALTH, POPULATION AND FAMILY WELFARE STORIES OF THE DAY

Wednesday

20190522

## Surrogate birth

### Parents of US cadet can use his sperm for surrogate birth (The Tribune: 20190522)

<https://www.tribuneindia.com/news/health/parents-of-us-cadet-can-use-his-sperm-for-surrogate-birth/776750.html>

A US judge has ruled in favour of the parents of a 21-year-old dead cadet saying they can use his frozen sperm to produce a child.

West Point cadet Peter Zhu died in February in a skiing accident. His parents had moved the court for the use of his sperms to continue his legacy and their family lineage, CNN reported.

New York Supreme Court Judge John Colangelo issued this ruling last week, two months after he granted Yongmin and Monica Zhu's request to save the sperm.

"Peter's parents are the proper parties to make decisions regarding the disposition of Peter's genetic material," Colangelo wrote.

"At this time, the Court will place no restrictions on the use to which Peter's parents may ultimately put their son's sperm, including its potential use for procreative purposes."

While Colangelo wrote that he saw no restrictions for use of the genetic material, he noted the Zhus may have to face "certain obstacles," including the possible reluctance of medical professionals to assist such a procedure, the CNN report said.

Zhu's parents had petitioned a court in March in order to allow the hospital to proceed with a sperm retrieval procedure. Peter's sperm has been stored in a local sperm bank for the past couple of months while Colangelo made his decision on what could be done with it.

He noted that given the shock of their son's death, they had not taken concrete steps to attempt conception with a surrogate mother.

Although, Peter did not have a living will, but Colangelo wrote that his decision was made, in part, by Peter's "presumed intent" based on his prior actions and statements, including Peter's decision to embark on a career in military service, his evident devotion to family, and a list of goals Peter had previously written, which included, "(have) three kids." Neither of Zhu's parents could be reached Tuesday. Their attorney, Joseph R. Williams, did not return CNN's request for comment.

The Zhus spoke via teleconference at a court hearing in late March and spoke to their reasons for wanting "to preserve the possibility of the use of Peter's sperm in the future in order to posthumously realize his dream of having children and continuing the family line," according to court documents.

The Ethics Committee for the American Society for Reproductive Medicine released guidance on posthumous retrieval for reproduction in 2018, CNN said.

In situations in which the deceased doesn't have a surviving spouse, the committee calls it "troubling" and says that a surviving parent doesn't have an ethical claim to their child's reproductive materials because they would not have been involved in a reproductive effort with their child, as a spouse or partner traditionally would. IANS

## **Placental stem cells**

### **Placental stem cells can regenerate heart after attack: Study (The Tribune: 20190522)**

<https://www.tribuneindia.com/news/health/placental-stem-cells-can-regenerate-heart-after-attack-study/776261.html>

Stem cells derived from the placenta can regenerate healthy heart cells after an attack, according to study conducted in animal models.

The findings, published in the journal Proceedings of the National Academy of Sciences (PNAS), may represent a novel treatment for regenerating the heart and other organs.

"Cdx2 cells have historically been thought to only generate the placenta in early embryonic development, but never before were shown to have the ability to regenerate other organs, which is why this is so exciting," said Hina Chaudhry, from the Icahn School of Medicine at Mount Sinai in the US.

"These findings may also pave the way to regenerative therapy of other organs besides the heart," Chaudhry said.

"They almost seem like a super-charged population of stem cells, in that they can target the site of an injury and travel directly to the injury through the circulatory system and are able to avoid rejection by the host immune system," she said.

The researchers had previously discovered that a mixed population of mouse placental stem cells can help the hearts of pregnant female mice recover after an injury that could otherwise lead to heart failure.

They showed that the placental stem cells migrated to the mother's heart and directly to the site of the heart injury. The stem cells then programmed themselves as beating heart cells to help the repair process.

The new study was aimed at determining what type of stem cells made the heart cells regenerate.

The researchers started by looking at Cdx2 cells, the most prevalent stem cell type in the previously identified mixed population, and found them to comprise the highest percentage (40 per cent) of those assisting the heart from the placenta.

To test the Cdx2 cells' regenerative properties, the researchers induced heart attacks in three groups of male mice.

One group received Cdx2 stem cell treatments derived from end-gestation mouse placentas, one group received placenta cells that did not express Cdx2, and the third group received a saline control.

The team used magnetic resonance imaging to analyse all mice immediately after the heart attacks, and three months after induction with cells or saline.

They found that every mouse in the group with Cdx2 stem cell treatments had significant improvement and regeneration of healthy tissue in the heart.

By three months, the stem cells had migrated directly to the heart injury and formed new blood vessels and new cardiomyocytes (beating heart muscle cells).

The mice injected with saline and the non-Cdx2 placenta cells went into heart failure and their hearts had no evidence of regeneration.

Researchers noted two other properties of the Cdx2 cells: they have all the proteins of embryonic stem cells, which are known to generate all organs of the body, but also additional proteins, giving them the ability to travel directly to the injury site.

This is something embryonic stem cells cannot do, and they appear to avoid the host immune response, researchers said.

The immune system did not reject these cells when administered from the placenta to another animal.

"These properties are critical to the development of a human stem cell treatment strategy, which we have embarked on, as this could be a promising therapy in humans.

"We have been able to isolate Cdx2 cells from term human placentas also; therefore, we are now hopeful that we can design a better human stem cell treatment for the heart than we have seen in the past," said Chaudhry.

"Past strategies tested in humans were not based on stem cell types that were actually shown to form heart cells, and use of embryonic stem cells for this goal is associated with ethics and feasibility concerns. Placentas are routinely discarded around the world and thus almost a limitless source," she said.

"These results were very surprising to us, as no other cell type tested in clinical trials of human heart disease were ever shown to become beating heart cells in petri dishes, but these did and they knew exactly where to go when we injected them into the circulation," said first author Sangeetha Vadakke-Madathil, a postdoctoral fellow at the Icahn School of Medicine at Mount Sinai. — PTI

## **Environmental toxins**

### **Environmental toxins may impair fertility of future generations (The Tribune: 20190522)**

<https://www.tribuneindia.com/news/health/environmental-toxins-may-impair-fertility-of-future-generations/775788.html>

We are exposed to hundreds of these pollutants in our daily lives, as they are used in the manufacture of plastics, pesticides and medicines. Tribune file

LONDON: Exposure to environmental pollutants can cause alterations in brain development that affect sexual development and fertility for several generations, a study has found.

Researchers from the University of Liege in Belgium monitored the sexual development of three generations of rats.

Pregnant rats were exposed to a mixture of common endocrine-disrupting chemicals (EDCs), at doses equivalent to those commonly experienced by people.

Their offspring showed impairments in sexual development and maternal behaviour that were passed on through several generations.

The female rats born in the first and second generation showed impairments in their care for their own pups

However, the female rats in the second and third generation exhibited a delayed onset of puberty and altered reproductive cycle and ovarian follicle development, indicating that their fertility was affected, even though they were never themselves exposed to the EDCs.

These changes were associated with altered gene expression in their brains that are known to affect how reproductive hormones are regulated.

“Our results raise real concerns about the effects of these pollutants in our environment. We found effects of EDCs in generations of animals that had not been directly exposed to the chemicals,” said Anne-Simone Parent from the University of Liege.

“We exposed the parent generation only and found long-term effects on fertility. Of course, in everyday life this would not happen and exposure to these harmful chemicals would continue, which means even more damage could be done,” said Parent.

The findings suggest that current levels of EDCs in our environment may already be causing long-lasting harm and that people and agencies should take measures to minimise exposure.

Endocrine-disrupting chemicals can interfere with the normal function of our hormones and have previously been associated with infertility and altered sexual development in animals and people, researchers said.

We are exposed to hundreds of these pollutants in our daily lives, as they are used in the manufacture of plastics, pesticides and medicines.

However, the extent of damage being done to our health and the consequences to future generations remains unclear. Rodent studies have suggested that exposure to EDCs can affect brain development through several generations but the generational effects on sexual development and reproduction have not previously been investigated.

“These findings raise questions about the legacy we are leaving future generations,” Rodriguez said. PTI

## **Carbon dioxide in atmosphere**

### **Carbon dioxide in atmosphere hits a high: how it relates to global warming( The Indian Express: 20190522)**

<https://indianexpress.com/article/explained/carbon-dioxide-in-atmosphere-hits-a-high-how-it-relates-to-global-warming-5741252/>

Greenhouse gas, global warming, Carbon dioxide, Carbon dioxide global warming, climate change, indian express

The higher the concentration of carbon dioxide, the greater the greenhouse gas effect that causes the Earth's atmosphere to heat up.

On May 11, global concentration of carbon dioxide in the atmosphere was measured to have crossed the 415 parts per million (ppm) mark for the first time. On every subsequent day thereafter, the daily average atmospheric concentration of carbon dioxide has remained over that level, touching 415.7 ppm on May 15. On May 18, the daily average carbon dioxide concentration, as measured by sensors at the Mauna Loa observatory in Hawaii, was 415.02 ppm.

The rapidly rising concentration, as measured from Mauna Loa and other observatories, is one of the best indicators of the manner in which the planet has been warming up. The higher the concentration of carbon dioxide, the greater the greenhouse gas effect that causes the Earth's atmosphere to heat up.

For several thousand years, the carbon dioxide concentration remained constant around 270-280 ppm, before the industrial revolution began to slowly push it up. When direct measurements began at the Mouna Loa observatory in 1958, concentrations were around 315 ppm. It took nearly 50 years for it to reach 380 ppm, a mark first breached in 2004, but thereafter the growth has been rapid.

Greenhouse gas, global warming, Carbon dioxide, Carbon dioxide global warming, climate change, indian express

The first full-day average of more than 400 ppm was achieved on May 9, 2013; two years later, in 2015, even the annual average exceeded 400 ppm. Currently, the carbon dioxide concentration is growing at more than 2 ppm per year, and scientists say the growth rate is likely to reach 3 ppm a year from this year.

The increase in atmospheric concentrations is caused by the carbon dioxide being constantly emitted in different, mostly man-made, processes. In recent years, the growth in global carbon dioxide emissions has slowed down considerably. It remained almost flat between 2014 and 2016, and increased by 1.6% in 2017 and about 2.7% in 2018. In 2018, the global emission of carbon dioxide was estimated at 37.2 billion tonnes.

The rapid rise in the atmospheric concentrations, however, is due to the fact that carbon dioxide has a very long lifespan in the atmosphere, between 100 and 300 years. So, even if the emissions were to miraculously reduce to zero all of a sudden, it would have no impact on the atmospheric concentrations in the near term.

About half of emitted carbon dioxide is absorbed by plants and oceans, leaving the other half to go into the atmosphere. An addition of about 7.5 billion tonnes carbon dioxide to the atmosphere leads to a 1 ppm rise in its atmospheric concentration. So, in 2018, for example, half the total emissions, or about 18.6 billion tonnes of carbon dioxide, would have been added to the atmosphere, leading to rise of 2.48 ppm in atmospheric concentrations.

The absorption of carbon dioxide by plants follows a predictable seasonal variability. Plants absorb more carbon dioxide during the summer, with the result that a lower amount of carbon dioxide is added to the atmosphere in the summer months of the northern hemisphere, which has considerably more vegetation than southern hemisphere. This variability gets captured in the very rhythmic seasonal fluctuation of atmospheric concentration of carbon dioxide.

The global goal in the fight against climate change has been defined in terms of temperature targets, not carbon dioxide concentrations. The stated effort of the global community is to keep the rise in average surface temperatures below 2°C higher than during pre-industrial times, and if possible below 1.5°C.

The carbon dioxide concentration level corresponding to a 2°C rise in global temperatures is generally understood to be 450 ppm. At current rates of growth, that level would be reached in less than 12 years, that is by 2030. Until a few years ago, it used to be understood that this milestone would not be reached till at least 2035. The corresponding carbon dioxide level for a 1.5°C rise is not very clearly defined.

A special report released by the Intergovernmental Panel on Climate Change last year said the world needed to achieve net zero emissions of all greenhouse gases, not just carbon dioxide, by 2050 to keep alive any realistic chances of restraining the temperature rise to within 1.5°C. The net zero needs to be achieved by 2075 to attain the 2°C target.

Net zero is achieved when the total emissions is neutralised by absorption of carbon dioxide through natural sinks like forests, or removal of carbon dioxide from the atmosphere through technological interventions.

## **Abortion**

### **A majority of Americans want abortion to be legal in the first two trimesters (The Economist: 20190522)**

<https://www.economist.com/leaders/2019/05/18/a-majority-of-americans-want-abortion-to-be-legal-in-the-first-two-trimesters>

If the Alabama legislature gets its way, abortion will soon become illegal there. A doctor convicted of performing an abortion could be sentenced to up to 99 years in prison. With no exemptions in cases of rape or incest, this would be the most restrictive such law in the country. But other states with Republican-controlled legislatures have passed “heartbeat” laws that are almost as absolute—they ban abortion from 6 weeks, at which point many women do not yet realise they are pregnant. These laws will be struck down by lower courts because they

contradict Roe v Wade, the 1973 Supreme Court ruling that made abortion legal throughout America. At which point the court will have to decide whether it wants to look at Roe again.

In the abortion argument, both sides long ago drove each other to extremes. The pro-life, fundamentalist view behind the Alabama bill is that a fertilised egg is no different from a person, and thus should enjoy the same legal rights. Accept that, and what right does a woman have to take a morning-after pill, or to end a pregnancy after a rape? The pro-choice extreme is that any restriction on abortion is an unacceptable attempt by government to control women's bodies. With debate gridlocked, the focus is on the courts.

## **Fat Gene'**

### **Fat Gene' test results are worse than worthless (Hindustan Times: 20190522)**

<http://paper.hindustantimes.com/epaper/viewer.aspx>

A study of 300,000 people found that only 43% those in the 90th percentile of obesity risk were actually obese

Like many genetic tests, a new one that uses several million genes to “predict” obesity is unlikely to do anyone's health any good, and might do harm. The news of the finding, published in the journal Cell, looked like a good piece of science, with the potential to improve scientists' understanding of why people exposed to the same or similar diets end up at very different weights. There's also an important message to society — that obesity isn't a failure of willpower. Some people have to struggle much harder than others to maintain a healthy weight.

Obesity is partly genetic. It's also partly environmental, because obesity in many countries has skyrocketed in recent decades along with changes in exercise patterns, eating habits and a host of other factors

The worrisome part was the suggestion — made by the tests' inventors in numerous news stories — that this could be used to screen kids. Detecting health problems before they start a major selling point for consumer genetics. But people may not recognise how inaccurate this test can be. In screening 300,000 people, the researchers found that only 43% those in the 90th percentile of obesity risk were actually obese, which is even less impressive considering that 40% of all Americans are obese.

And more problematic for potential consumers, 17% of those with the highest risk scores weren't obese or even overweight. Those thin people who score in the 90th percentile might not be genetically susceptible after all, the discrepancy a reflection of the imperfection of the test. Or they might be eating a diet that counteracts their predisposition. Or if they're still kids, it might mean obesity is in their future, It's hard to tell.



So what will happen if parents or doctors start telling kids they are “pre-obese”? There’s already a problem with kids and young teens dieting — especially girls. Many think they’re fat when they are in fact healthy. Researchers have found, not too surprisingly, that young girls do damage to their bodies through excessive dieting. Some might even develop eating disorders, which can kill people a lot earlier in life than obesity ever would have.

And then there’s the question of what to do about it if a child gets a high risk score. Right now there’s concern that pushing low-fat diets might have made people even fatter. Low-carbohydrate diets are in style, but are they good for young kids? The American Academy of Paediatrics and a number of experts recommend that overweight kids eat healthy — not starve themselves. But that’s no different from what skinny kids should be doing. We already know from twin studies that obesity is partly genetic; it runs in families. We know it’s partly environmental, because obesity in many countries has skyrocketed in recent decades along with changes in exercise patterns, eating habits and a host of other factors.

And so it’s a stretch to assume that a genetic test of this sort can predict whether any given person is going to become obese. Kenneth Weiss, a geneticist at Penn State University, said that the problem with using these sorts of complex combinations of genes to predict the future is that the environment can change in unpredictable ways. Obesity was relatively uncommon in many populations only a few decades ago, and then it became an epidemic. Who knows if the environment will change again in the next few decades. Different environments cannot only temper the effects of genes but even reverse them.

Some experts interviewed after the obesity study worried that a genetic test for obesity would cause people to “give up,” assuming their weight was genetically determined. But give up what? Low-calorie dieting and self-starvation are not proven solutions. We might all be better off if we “gave up” dieting.

Scientists are the ones who should be pushed not to give up. They still need to figure out how to help obese people lose weight permanently, and they need to admit that what experts told people in the past was wrong.

## **Environment at work**

### **Creating a high-performance environment at work (Hindustan: 20190522)**

<http://paper.hindustantimes.com/epaper/viewer.aspx>

Creating the right organizational culture is what helps build a high performance work environment.

1. High performance work environment starts with leadership: The most vital element of a high performance work environment is people. Motivated employees that are adequately supported by apt tools, resources, and leadership will help an organization achieve the desired results. With the proper guidance, support and a clear vision, employees are more likely to create the results you want. If the leaders practice the expectations they set for their teams and lead from the front, employees will probably choose to emulate it.

2. Develop an inspiring vision and state it clearly: A leader must have clarity and belief in the vision and goals of the organization before he communicates it to the team. If a leader is inspired, he is more likely to share that passion with the rest of the team. Communicating the vision by merely talking about it or putting up posters on the wall will not suffice. A leader must model the attitudes and behaviours he expects from his team.

If a leader does not show the path and communicate a vision clearly, employees will lack direction and their level of engagement and motivation will suffer. Employees must clearly understand their role in the company and how they can contribute to the end goal. When employees truly understand the impact of their role, the more engaged they will be in that role.

3. Having a leadership that is trustworthy: If a team leader is not trusted, they can't be inspiring or trusted to resolve conflicts, get the team to aspire to higher goals or believe their communications.

Building a positive relationship increases trust. Employees trust a leader that has the requisite knowledge or expertise to solve business challenges. In addition, employees trust consistent leaders who practice what they preach. A good leader can be trusted to quickly and directly address conflicts that arise in a team, so that the team is built on cooperation and not unhealthy competition.

4. Setting aspirational, yet achievable goals: Set an expectation of quality output and challenge employees to exceed those expectations.

Setting easily achieved performance expectations might cause your employees to lose interest. Hence, set expectations that are aspirational and then provide the support needed to achieve that high level of performance. When they accomplish something that is extraordinary they recognize their capabilities and competencies.

Provide coaching, training and incentivise performance to challenge employees. Organizations must create intentional opportunities to make innovation part of work. Enhancing engagement, promoting creative thinking and encouraging strategic risk-taking is important.

5. Arm your employees with the right tools: Support comes from coaching and continuous feedback. Regularly reinforce why employees are valuable and how they will be recognized if they demonstrate desired behaviours and results. Provide training, education, and skilling opportunities to build a superior, high-performance workforce. Training must not be limited to the larger employee population. Providing regular management and leadership training and

coaching to the leadership is equally critical. The impact of the leadership on the development of a high-performance workforce is crucial.

6. Encourage and offer feedback and recognition: Achievements that further the company vision must be recognized to keep your employees motivated to keep working hard. Create opportunities for an open dialogue within the company. Frequent feedback keeps people engaged. Leadership must share regular updates on employee achievements, organizational progress and developments and use opportunities to reinforce the vision of the company. Recognition is an especially powerful tool for building an engaged workforce. Recognition must be frequent, timely, specific and relevant. Employees must be clear as to why they have received recognition and what actions of theirs deserved merit, so that it is a reinforcement of the desired behaviour.

Essentially, high level of performance comes from direct and effective communication, regular evaluation, and feedback. Empower your employees with knowledge and career goals that will motivate them to perform better. Moving ahead, supervise the progress, evaluate the performance, and provide comments to support your high-performance team.

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## Post – natal Depression (The Asian Age: 20190522)

<http://onlinepaper.asianage.com/article/detailpage.aspx?id=13042624>

# YES SAD DADS EXIST!

Studies prove that post-natal depression is not gender-specific

At a time when discussions on post-natal depression are rife, a study published in the 'Journal of Mental Health' finds that men too go through it, but the signs are often misinterpreted for fatigue or stress. And guess what! Even men aren't aware of it.

A study conducted among 406 British adults on maternal and paternal post-natal depression shows that 90.1 per cent of the participants correctly described females experiencing postnatal depression, while only 46.3 percent did so for males. Participants of both sexes were less likely to say



that there was something wrong with fathers (76 percent) compared to mothers (97 percent). The study points out that people are more likely to believe that something is wrong when a woman displays the symptoms of post-natal depression, and they ignore the signs in men as the popu-

lar belief that postnatal depression is a 'woman's issue' due to gender-specific factors such as pregnancy-induced hormonal changes and delivery complications. Paternal depression is said to have negative impacts on family as a whole. Other than changes in hormones in

fathers, there are ecological risk factors such as excessive stress from becoming a parent, lack of social support system for parenting and feeling excluded from mother-infant bonding, which might result in the condition.

Researchers also observe that men who experience symptoms of post-natal depression may not be confident about asking for help and may be missed by healthcare professionals also.

How real is paternal postnatal depression? What care is required for healthy parenting and graceful acceptance of parenthood for new parents? How to help them cope with stressful life of parenthood? What are the steps to be taken to be supportive partners, create awareness and proper treatment? We talk to psychiatrists, parents and relationship experts to know more.

## **Cancer**

### **Varian of US to acquire TPG's cancer co CTSI (The Times of India: 20190522)**

<https://timesofindia.indiatimes.com/business/india-business/varian-of-us-to-acquire-tpgs-cancer-co-ctsi/articleshow/69436454.cms>

Read more at:

[http://timesofindia.indiatimes.com/articleshow/69436454.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](http://timesofindia.indiatimes.com/articleshow/69436454.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst)

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## **Vaccines**

### **Scientists invent method to transfer life-saving vaccines to impoverished areas (New Kerala: 20190522)**

<https://www.newkerala.com/news/read/145650/scientists-invent-method-to-transfer-life-saving-vaccines-to-impoverished-areas.html>

Scientists have developed a new way that can help store vaccines and their subsequent transfer to remote and impoverished areas of the world.

The new method developed by McMaster scientists and published in the 'Scientific Reports' combines the active ingredients in existing vaccines with a sugary gel, where they remain viable for eight weeks or more, even at elevated temperatures.

"This, to us, is the ultimate application of this technology. To imagine that something we worked on in the lab could one day be used to save people's lives is very exciting," said the paper's lead author Vincent Leung.

The method creates light, durable, and compact doses that would be ideal for shipping Ebola vaccine, for example, to affected regions of Africa, the researchers said. The process adds only marginal cost to preparing a vaccine and eliminates almost all the cost of transporting it - which can account for 80 per cent of the total cost of inoculation.

The storage technology was created by chemical engineers at McMaster, who had already demonstrated its effectiveness in other applications, such as an edible coating that can prolong the shelf life of fruits and vegetables.

The invention is significant because it can replace the cumbersome "cold chain" - constant storage at temperatures between 2C and 8C - which is currently necessary to keep anti-viral vaccines viable.

"You can spend all kinds of money developing a vaccine, but if it is deactivated by high temperature an hour before you can give it to someone, it doesn't matter," said co-author Ali Ashkar, a professor of Pathology and Molecular Medicine specializing in immunology.

The cold-chain challenge is so great, the researchers said, that in some regions, vaccines must be transported by camels bearing solar-powered mini-refrigerators. There are some populations that never receive vaccines.

"If you can't get vaccines to the places where people need them, there's no point in having them," said co-author Matthew Miller, an assistant professor in the Department of Biochemistry and Biomedical Sciences whose laboratory specialises viral pathogens.

Not being able to get vaccines to isolated areas makes it impossible to eradicate deadly viruses. Unchecked, such viruses can devastate local populations and reach exposed pockets in more populated countries where religious, cultural or other concerns have diminished the proportion of vaccinated individuals.

The researchers have proven the method to be viable using two sample vaccines - influenza virus and herpes simplex virus - to inoculate and test mice by exposing them to the viruses because the immune response of mice is similar to that of humans.

The researchers are working with a commercial partner to get the technology to market.

## **New nasal spray**

### **New nasal spray treats depression faster: Study (New Kerala: 20190522)**

<https://www.newkerala.com/news/read/145640/new-nasal-spray-treats-depression-faster-study.html>

A new nasal spray has been found effective in treating people with depression who are often unable to relieve their symptoms despite trying other anti-depressants, says a study.

The study published in the American Journal of Psychiatry is one of the key findings that led to the recent US Food and Drug Administration (FDA) approval of esketamine nasal spray, in conjunction with an oral antidepressant, for use in people with treatment-resistant depression.

"This trial of esketamine was one of the pivotal trials in the FDA's review of this treatment for patients with treatment resistant depression. Not only was adjunctive esketamine therapy effective, the improvement was evident within the first 24 hours," said Michael Thase, Professor at the University of Pennsylvania in the US.

"The novel mechanism of action of esketamine, coupled with the rapidity of benefit, underpin just how important this development is for patients with difficult to treat depression," Thase said.

The study was conducted at 39 outpatient centres from August 2015 to June 2017 and involved nearly 200 adults with moderate to severe depression and a history of not responding to at least two antidepressants.

During the research, participants were randomly assigned to one of two groups. One group was switched from their current treatment to esketamine nasal spray (56 or 84 mg twice weekly) plus a newly initiated antidepressant.

The other group was switched from their current treatment to a placebo nasal spray in combination with a new antidepressant, said the study.

The improvement in depression among those in the esketamine group was significantly greater than the placebo group on day 28. Similar improvements were seen at earlier points in time, said the study.

Adverse events in the esketamine group generally appeared shortly after taking the medication and resolved by 1.5 hours later while patients were in the clinic.

The most common side effects included dissociation, nausea, vertigo, dysgeusia (distortion of the sense of taste) and dizziness. Seven per cent of patients in the esketamine group discontinued the study due to the side effects.

## Enzymes

### Scientists identify enzymes that play protective role against diabetic kidney disease (New Kerala: 20190522)

<https://www.newkerala.com/news/read/145585/scientists-identify-enzymes-that-play-protective-role-against-diabetic-kidney-disease.html>

Researchers have identified a group of enzymes that help protect certain people against diabetic kidney disease.

The study published in 'Diabetes Care' is built on the findings from a 2017 Joslin Medalist Study of protective factors and diabetic kidney disease (or DKD).

The 2017 study focused on Joslin Medalists--people who have had diabetes for more than 50 years with little to no complications. The Medalists who never developed kidney disease had higher levels of a group of enzymes involved in glucose metabolism than people who did develop kidney disease.

In their new study, doctors Hetal Shah, Daniel Gordin, and George King were able to show that protective factors are also present in kidney-disease-free people with shorter-duration type 1 diabetes and type 2 diabetes.

This finding indicates that these enzymes, and one in particular known as PKM2, play a strong protective role against kidney disease. The enzymes could be used as both biomarkers and, potentially, targets for DKD intervention.

"The previous study built up the rationale that there must be something protecting these people from diabetic kidney disease. This would explain how these individuals have been able to live with insulin-dependent diabetes for so many years," said Dr Gordin.

The researchers set out to investigate three questions related to the 2017 discovery. First--was PKM2 protective in non-Medalists? Second--was PKM2 circulating in the Medalists' plasma, or was it only found in the kidney? And third--do the Medalists have any other protective factors to be explored?

To answer the first question, they studied the postmortem kidneys donated by people in all of the cohorts they wanted to investigate. For the second question, they used cutting edge proteomic and metabolomic techniques to study the circulating plasma of Medalists. For the third question, they looked at the plasma and identified a number of metabolites and proteins that were also elevated.

"We were able to replicate the findings of the elevated PKM2 in those with good kidney function in both type 1 and type 2 diabetes," said Dr Shah.

"Also, through the plasma proteomic and metabolomic studies in the Medalists, we found that there's this amyloid precursor protein or APP, that shows up as a potentially protective factor against diabetic kidney disease," Dr Shah added.

Understanding the DKD protective factors could have clinical implications. If a biomarker circulates in the bloodstream, it could allow doctors to perform a simple blood test to determine a patient's risk for developing DKD. They could then create personalized intervention courses.

Once the protective mechanisms are explicitly mapped, they could even be used as therapeutic targets.

## **Overweight and obese**

### **Both overweight and obese adolescents have similar risks of developing heart disorders (New Kerala: 20190522)**

<https://www.newkerala.com/news/read/145583/both-overweight-and-obese-adolescents-have-similar-risks-of-developing-heart-disorders.html>

A new study has suggested that overweight and obese adolescents have similar risks of developing heart disorders.

The study published in the journal 'Cardiology in the Young' is the results of cardiovascular fitness tests with volunteers aged 10-17 were similar in both groups.

"Until recently, overweight in adolescence wasn't considered as important risk as obesity for the development of the cardiovascular disease. We found the risks to be similar in both cases," said Vitor Engracia Valenti, the principal investigator for the project.

The researchers divided 40 adolescents aged between 10 and 17 into two groups, each with ten boys and ten girls an overweight group with BMI-for-age Z-scores of +1 or +2 and an obese group with Z-scores above +2.

Z-scores indicate the number of standard deviations below or above the population mean.

The participants performed a moderate exercise protocol, which involved walking on a treadmill at a slope of 0 per cent and required 70 per cent of the maximum estimated heart rate for this age group.



Heart rate variability was measured before and after the exercise session to assess the speed of autonomic cardiac function recovery. Prolonged autonomic nervous system imbalances after physical exertion have been shown to increase the risk of an acute event and of future cardiovascular disease.

During the first few seconds of an exercise session, the parasympathetic nervous system decelerates cardiac function. One of the two main divisions of the autonomic nervous system, this system conserves energy by slowing the heart rate and relaxing the body in other ways. After 50-60 seconds, the sympathetic nervous system kicks in, stimulating activity such as increased heart rate via adrenalin release, which prepares the body to react to a stressful situation.

The researchers found no significant difference in heart rate variability between overweight and obese adolescents or between girls and boys.

"The mean autonomic nervous system variables were practically identical for both groups regardless of sex," Valenti said.

"These findings suggest that overweight adolescents have the same predisposition or vulnerability as that of obese adolescents to cardiovascular diseases such as hypertension and heart failure, as well as to metabolic disorders such as diabetes, dyslipidemia, and high levels of triglycerides and LDL cholesterol," Valenti added.

## **Heart disease**

### **Heart disease risks in overweight, obese kids similar (New Kerala: 20190522)**

<https://www.newkerala.com/news/read/145564/heart-disease-risks-in-overweight-obese-kids-similar.html>

Overweight and obese adolescents have similar increased risks of developing heart disorders, say researchers.

"Until recently, overweight in adolescence wasn't considered as important a risk as obesity for the development of cardiovascular disease. We found the risks to be similar in both cases," said study lead author Vitor Engracia Valenti, Professor at Sao Paulo State University in Brazil.

The study involved a small group of adolescents, aged between 10 and 17. The participants performed a moderate exercise protocol, which involved walking on a treadmill. Heart rate variability was measured before and after the exercise to assess the speed of autonomic cardiac function recovery.

Prolonged autonomic nervous system imbalances after physical exertion have been shown to increase the risk of an acute event and of future cardiovascular disease, said study.

Previous studies have shown the longer the autonomic nervous system takes to stabilise after a period of exertion, the greater the risk of cardiovascular or metabolic disease, according to Professor Valenti.

The researchers found no significant difference in heart rate variability between overweight and obese adolescents or between girls and boys.

"These findings suggest overweight adolescents have the same predisposition or vulnerability as that of obese adolescents to cardiovascular diseases such as hypertension and heart failure, as well as to metabolic disorders like diabetes, dyslipidemia, and high levels of triglycerides and LDL cholesterol," Valenti said.

The study was published in the journal *Cardiology in the Young*.

## **Soy food**

### **Soy food cuts fracture risks in breast cancer survivors (New Kerala: 20190522)**

<https://www.newkerala.com/news/read/145560/soy-food-cuts-fracture-risks-in-breast-cancer-survivors.html>

Eating soy-rich food can decrease the risk of bone fractures in pre-menopausal breast cancer survivors, suggests a new study. The higher soy intake was linked to 77 per cent reduced risk of osteoporotic fractures in younger women, the study showed.

In the study, published in *JNCI Cancer Spectrum* journal, researchers at Yale University investigated the impact of exercise and soy food consumption on bone fracture rates among breast cancer survivors.

"The menopausal transition is known to be a period of high risk for bone loss, and given the relative scarcity of data related to fracture risk among younger women with breast cancer, this study marks an important contribution to this body of literature," said the paper's lead author, Evelyn Hsieh, Assistant Professor at Yale University.

"Our findings, in particular regarding the protective effects of soy food consumption, provide novel insight into how future interventions can be best tailored to different risk groups," Hsieh said.

For the study, the team used data from the Shanghai Breast Cancer Survival study of 5,042 newly diagnosed breast cancer survivors in the age group of 20-75.

The study found soy-based foods that are rich in isoflavones provide a natural selective estrogen receptor modulator (SERM), which helps in increasing the bone mineral density.

Previous studies have showed the use of tamoxifen, a SERM or drug, that is prescribed for breast cancer patients, reduces risk of fractures.

Several treatments for breast cancer can cause premature menopause and decrease bone mineral density, leading to a higher incidence of osteoporosis-related fractures among survivors compared with healthy women in the same age group.

Breast cancer is the second most common cancer among women in the US, with one in eight women diagnosed with it during their lifetime.