



DAILY NEWS BULLETIN

LEADING HEALTH, POPULATION AND FAMILY WELFARE STORIES OF THE DAY
Thursday 20190328

Medical research council - ethical guidelines

Medical research council releases handbook on ethical guidelines (The Tribune: 20190328)

<https://www.thehindu.com/news/cities/Delhi/medical-research-council-releases-handbook-on-ethical-guidelines/article26658043.ece>

Aims at improving overall quality of research outcomes

The Indian Council of Medical Research (ICMR) has released a handbook on national ethical guidelines, which is aimed at improving the overall quality of research outcomes while ensuring protection of research participants and responsiveness to the health needs of Indians.

The ICMR has been preparing ethical guidance documents for the conduct and review of biomedical and health research in India since 1980. It was revised in 2000, 2006 and 2017.

The latest document 'National Ethical Guidelines for Biomedical and Health Research Involving Human Participants' was released in October 2017.

"In continuation of the detailed guidance, it was felt that there is a need to widely disseminate the document in a simplified manner," noted a release issued by the medical research council.

Quick reference

The handbook, released earlier this week, was prepared to serve as an easy and quick reference to the detailed rules.

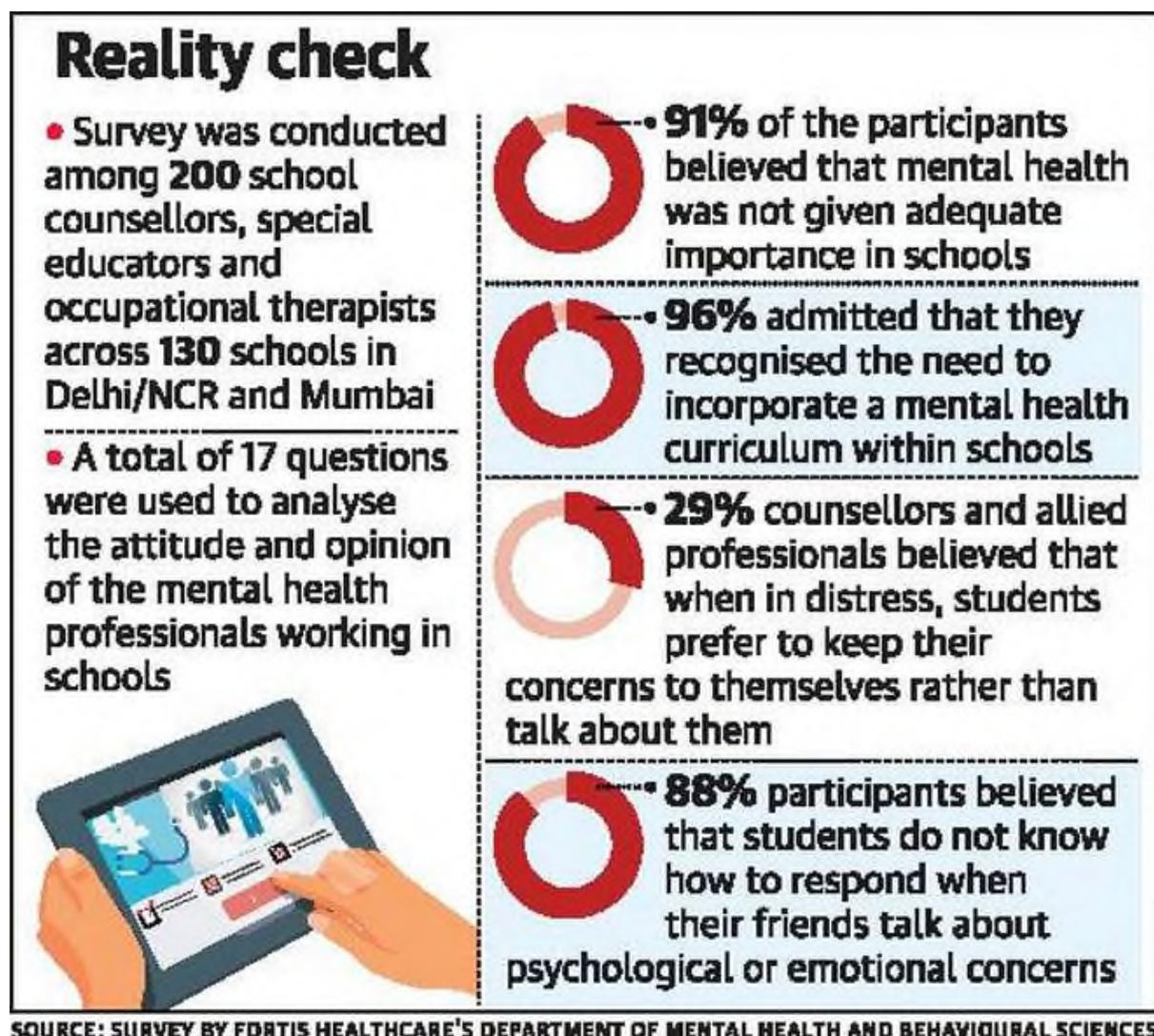
It summarises the 12 sections of the main ethical guidelines, including ethical principles, general ethical issues, responsible conduct of research, ethics committees, and informed consent.

“These guidelines should be followed by all researchers in the conduct of biomedical research and by ethics committees in the review and monitoring of biomedical research so that human participants are protected against any discrimination,” the release noted.

Mental Health

Youth going online for info on mental illness, finds survey (The Tribune: 20190328)

<https://www.thehindu.com/news/cities/Delhi/youth-going-online-for-info-on-mental-illness/article26658014.ece>



Need for introducing mental health curriculum in schools

A total of 65% of counsellors and allied professionals believe that students in Delhi/NCR and Mumbai schools are not aware of common mental illnesses, and search engines and social media are the preferred source of information for students about mental health.

This was found during a survey conducted by Fortis Healthcare's Department of Mental Health and Behavioural Sciences among 200 school counsellors, special educators and occupational therapists across 130 schools in Delhi/NCR and Mumbai.

The survey consisted of 17 questions to analyse the attitude and opinion of the community of mental health professionals working in schools.

What the survey found

The lead of the survey Dr. Samir Parikh, director, Mental Health and Behavioural Sciences, at the hospital said: "Ninety-one per cent of the participants believed that mental health is not given adequate importance in schools while 96% admitted that they recognised the need to incorporate a mental health curriculum within schools. Around 29% counsellors and allied professionals believed that when in distress, students prefer to keep their concerns to themselves rather than talking about them. Also 88% participants believed that students do not know how to respond when their friends talk about psychological or emotional concerns."

Advocating for introducing a mental health curriculum in the schools, Dr. Parikh said that this should not be viewed as an additional educational curriculum, but a platform to create a sensitised, educated as well as empowered generation encouraging positive mental health.

"In the coming academic year, our team of experts shall be open to training teachers across the schools in the country to be able to incorporate such a mental health curriculum within the classrooms, with the aim of creating a sensitised, educated and empowered generation along with promoting positive mental health for the future generations to come," he added.

Contraceptive jewellery'

Contraceptive jewellery' may make family planning more attractive (The Tribune: 20190328)

<https://www.tribuneindia.com/news/health/-contraceptive-jewellery-may-make-family-planning-more-attractive/749169.html>

'Contraceptive jewellery' may make family planning more attractive

The jewellery-based technique might also be used for delivering other drugs through the skin.

Family planning for women might one day be as simple as putting on jewellery, according to scientists who have developed a technique for administering contraceptives through earrings, rings or necklaces.

The contraceptive hormones are contained in patches applied to portions of the jewellery in contact with the skin, allowing the drugs to be absorbed into the body, according to a report published in the *Journal of Controlled Release*.

Initial testing suggests the contraceptive jewellery may deliver sufficient amounts of hormone to provide contraception, though no human testing has been done yet.

A goal for the new technique is to improve user compliance with drug regimens that require regular dosages.

Beyond contraceptives, the jewellery-based technique might also be used for delivering other drugs through the skin.

"The more contraceptive options that are available, the more likely it is that the needs of individual women can be met," said Mark Prausnitz, at the Georgia Institute of Technology in the US.

"Because putting on jewellery may already be part of a woman's daily routine, this technique may facilitate compliance with the drug regimen. This technique could more effectively empower some women to prevent unintended pregnancies," said Prausnitz.

Contraceptive jewellery adapts transdermal patch technology that is already used to administer drugs that prevent motion sickness, support smoking cessation, and control the symptoms of menopause but have never been incorporated into jewellery before.

Contraceptive patches are also already available, but Prausnitz believes pairing them with jewellery may prove attractive to some women—and allow more discreet use of the drug delivery technology.

Researchers tested the concept on animal models, first on ears from pigs. Test patches mounted on earring backs and containing the hormone levonorgestrel were also applied to the skin of hairless rats.

To simulate removal of the earrings during sleep, they applied the patches for 16 hours, then removed them for eight hours.

Testing suggested that even though levels dropped while the earrings were removed, the patch could produce necessary amounts of the hormone in the bloodstream.

The earring patch tested by the researchers consisted of three layers. One layer is impermeable and includes an adhesive to hold it onto an earring back, the underside of a wristwatch or the inside surface of a necklace or ring.

A middle layer of the patch contains the contraceptive drug in solid form. The outer layer is a skin adhesive to help stick to skin so the hormone can be transferred.

Once in the skin, the drug can move into the bloodstream and circulate through the body.

If the technique ultimately is used for contraception in humans, the earring back would need to be changed periodically, likely on a weekly basis.

The contraceptive jewellery was originally designed for use in developing countries where access to health care services may limit access to long-acting contraceptives such as injectables, implants and IUDs.

The researchers tested patches adhered to earring backs, about one square centimeter in area, and placed them tightly on the skin of the test animals.

Earring backs and watches may be most useful for administering drugs because they remain in close contact with the skin to allow drug transfer. The dose delivered by a patch is generally proportional to the area of skin contact.

"The advantage of incorporating contraceptive hormone into a universal earring back is that it can be paired with many different earrings," Prausnitz said. — PTI

Irregular heartbeats

Family Planning (The Asian Age: 20190328)

<http://onlinepaper.asianage.com/articledetailpage.aspx?id=12705960>

Now, wear your contraceptives around your neck, on your fingers

Washington: Family planning for women might one day be as simple as putting on jewellery, according to scientists who have developed a technique for administering contraceptives through earrings, rings or necklaces.

The contraceptive hormones are contained in patches applied to portions of the jewellery in contact with the skin, allowing the drugs to be absorbed into the body, according to a report published in the *Journal of Controlled Release*.

Initial testing suggests the contraceptive jewellery may deliver sufficient amounts of hormone to provide contraception, though no human testing has been done yet.

A goal for the new technique is to improve user compliance with drug regimens that require regular dosages. Beyond contraceptives, the jewellery-based technique might also be used for delivering other drugs through the skin. "The more contraceptive options that are available, the more likely it is that the needs of individual women can be met," said Mark Prausnitz, at the Georgia Institute of Technology.

"Because putting on

FUTURE OF FAMILY PLANNING

▶ Family planning for women can be as simple as putting on jewellery for women in the future, according to scientists who have developed a technique for administering contraceptives through earrings or necklaces

▶ The contraceptive hormones are contained in patches applied to portions of the jewellery in contact with the skin, allowing the drugs to be absorbed into the body

▶ A goal for the new technique is to improve user compliance with drug regimens that require regular dosages. Beyond contraceptives, the jewellery-based technique might also be used for delivering other drugs through the skin.

▶ Contraceptive jewellery adapts transdermal patch technology that is already used to administer drugs that prevent motion sickness and control the symptoms of menopause

jewellery may already be part of a woman's daily routine, this technique may facilitate compliance with the drug regimen. This technique could more effectively empower some women to prevent unintended pregnancies," said Prausnitz.

Contraceptive jewellery adapts transdermal patch technology that is already used to administer drugs that prevent motion sickness, support smoking cessation, and

control the symptoms of menopause, but have never been incorporated into jewellery before.

Contraceptive patches are also already available, but Prausnitz believes pairing them with jewellery may prove attractive to some women — and allow more discreet use of the drug delivery technology.

Researchers tested the concept on animal models, first on ears from pigs. Test patches mounted on

earring backs and containing the hormone levonorgestrel were also applied to the skin of hairless rats.

To simulate removal of the earrings during sleep, they applied the patches for 16 hours, then removed them for eight hours.

Testing suggested that even though levels dropped while the earrings were removed, the patch could produce necessary amounts of the hormone in the bloodstream. The earring patch tested by the researchers consisted of three layers.

One layer is impermeable and includes an adhesive to hold it onto an earring back, the underside of a wristwatch or the inside surface of a necklace or ring. A middle layer of the patch contains the contraceptive drug in solid form. The outer layer is a skin adhesive to help stick to skin so the hormone can be transferred. Once in the skin, the drug can move into the bloodstream and circulate through the body. If the technique ultimately is used for contraception in humans, the earring back would need to be changed periodically, likely on a weekly basis. — PTI

Smoking

50,000 fined in Delhi for smoking in public in 2018(The Times of India: 20190328)

<https://timesofindia.indiatimes.com/city/delhi/50k-fined-for-smoking-in-public-last-year/articleshow/68605315.cms>

The next time you are standing near a bus stop or metro station in south Delhi, suppress the urge to light a cigarette as there are high chances of getting caught and being fined Rs 200. In

2018, over 10,000 people were booked for this offence in south Delhi alone. This year, 574 have ended up paying the fine till date. In Lutyens' Delhi, 1,183 people have been challaned this year.

Since last year, more than 50,000 people have been challaned for public smoking under Cigarettes and Other Tobacco Products Act (COTPA), the highest number since the law was enacted. Beat constables have been asked to patrol markets and areas near schools to nab smokers.

image (15)

The anti-public smoking drive showed that youths between the age-group of 20-30 were the biggest violators. Women constituted about 30% of the violators. Officers said 95% challans were issued to smokers and 5% to tobacco product vendors near educational institutions. In some instances, the violators were found to be repeat offenders.

Delhi Police PRO, DCP Madhur Verma said that cops have been asked to keep a watch on markets, metro stations and bus stops where the maximum violations are detected. "We issue fines on the spot and counsel offenders about smoking in public places. A police station is tasked each day to conduct such a drive in their area," he added.

it's better to target the root cause. stop manufacturing/importing and the sale of cigarettes.

abhi kumar

The police drive peaks between 6pm and 9pm, the time when many people are found violating the norms. The rules governing the sale of tobacco products are enforced strictly outside hospitals and policemen have been deployed outside schools to enforce the ban on sale of tobacco within 100 metres of the establishments. Apart from police, a team from the tobacco control cell has been keeping a check on the sale of tobacco to minors.

Police said issuing a challan under COTPA has proven effective. Earlier, challans were issued under "kalandra" proceedings (breach of peace or disturbing public tranquility) where the fine would be payable in the presence of a magistrate. Police sources said that the system proved less effective as violators didn't provide ID cards or turn up to pay the fine.

Birth control: Contraceptive jewellery

Next form of birth control: Contraceptive jewellery (The Times of India: 20190328)

<https://timesofindia.indiatimes.com/home/science/next-form-of-birth-control-contraceptive-jewellery/articleshow/68607108.cms>

(Clockwise from left) A watch, ring, choker necklace and earring that have white patches containing the contraceptive hormone

(Clockwise from left) A watch, ring, choker necklace and earring that have white patches containing the contraceptive hormone

Contraceptive jewellery is currently being tested by scientists as a new form of birth control.

Researchers from the Georgia Institute of Technology have developed a technique for administering contraceptive hormones through backings that have been placed on items of jewellery, including earrings, watches and rings.

The patches that contain the hormones are placed on the area of the jewellery most likely to come into contact with the skin, such as the back of an earring or behind the face of a watch.

According to a report published in the 'Journal of Controlled Release', initial testing has suggested that contraceptive jewellery may be able to provide the wearer with a sufficient amount of hormones to act as a form of birth control.

However, no human testing has been carried out as of yet.

"The more contraceptive options that are available, the more likely it is that the needs of individual women can be met," said Mark Prausnitz, Regents' professor in the School of Chemical and Biomolecular Engineering at the Georgia Institute of Technology.

"Because putting on jewellery may already be part of a woman's daily routine, this technique may facilitate compliance with the drug regimen." Professor Prausnitz added that this technique may "empower" women to prevent unplanned pregnancies.

The professor and his colleagues Mohammad Mofidfar, a postdoctoral fellow, and Laura O'Farrell, a senior research scientist, carried out the study by testing the contraceptive jewellery on animals.

The scientists first tested the patches on the ears of pigs, before trialling them on the skin of hairless rats.

The researchers placed the patches on the animals for 16 hours, before removing them for eight hours to imitate a woman taking off her jewellery before bed.

While levels of the contraceptive hormone dropped when the patches were removed, wearing the contraceptive jewellery may provide women without enough hormone in the bloodstream to be a reliable form of birth control.

The contraceptive jewellery utilises transdermal patch technology. Another example of transdermal patch technology being used is with nicotine patches, for those trying to quit smoking.

Although contraceptive patches already exist, the ones placed on jewellery would be a lot smaller, as the backings tested on jewellery measure at around 1sqcm.

Already-existing contraceptive patches measure at around 5sqcm. “There is a lot of experience with making and using conventional transdermal patches,” Professor Prausnitz said.

“We are taking this established technology, making the patch smaller and using jewellery to help apply it.”

While the contraceptive jewellery was conceived as an accessible form of birth control for women in developing countries, Professor Prausnitz believes it could prove “appealing and helpful” to women across the globe.

Download The Times of India News App for Latest Home News.

Child Birth

Women delivers twins a month after 1st birth (The Times of India: 20190328)

<https://timesofindia.indiatimes.com/world/south-asia/woman-delivers-twins-a-month-after-first-birth/articleshow/68607454.cms>

Irregular heartbeats

Computer tool predicts risk of deadly irregular heartbeats (The Tribune: 20190328)

<https://www.tribuneindia.com/news/health/computer-tool-predicts-risk-of-deadly-irregular-heartbeats/749162.html>

Scientists have developed a computer system that can accurately predict which patients with a rare heart condition will suffer from a potentially fatal events, and whether they may benefit from life-saving implanted devices.

The tool, developed by researchers at Johns Hopkins University in the US, may help avoid unnecessary—and potentially risky—surgeries to place the devices.

An estimated 1 in 5,000 people have arrhythmogenic right ventricular cardiomyopathy (ARVC), a complex, multigene, inherited disease of the lower heart chambers that can cause deadly arrhythmias, or irregular heartbeats.

Although rare, it is a very frequent cause of sudden death in young adults, researchers said.

The average age of diagnosis is 31, although it can emerge from adolescence through middle age.

ARVC can be effectively managed in many cases with an implantable cardioverter-defibrillator (ICD), a device that detects electrical abnormalities in heart muscle and immediately shocks the heart to re-establish normal rhythm.

ICDs prevent sudden cardiac death and save lives. However, these devices come with risks and side effects, said Cynthia A James, assistant professor at the Johns Hopkins University.

The devices may deliver inappropriate shocks when patients are not experiencing life-threatening arrhythmias. The ICD itself or pacemaker leads placed in the heart to deliver a shock may fail over time, necessitating replacement with surgery.

Infections brought on by these devices—and even just wearing out the device’s battery with time—also require replacement, hospitalisations and expense, she added.

“Because patients develop this condition at such a young age, they typically need several ICD replacements over the course of their lives,” said James.

“For ARVC patients, getting an ICD is a big decision with serious consequences,” she said.

While physicians are generally in agreement that patients who experience a life-threatening arrhythmia qualify for an ICD, it has been unclear whether patients who have not yet experienced this event should get one for prevention.

Researchers pooled medical record data from 528 patients in five registries based at 14 academic medical centres in the US and Europe.

The group was nearly evenly split between male and female and between North America and Europe. None had yet experienced a life-threatening arrhythmia.

Then, using risk factors derived from published previous studies, researchers developed a computer-based mathematical set of consistent rules to try to predict whether any of the 528 patients might undergo a serious arrhythmia over time.

Over nearly five years of follow-up, just over a quarter of these patients experienced a dangerous arrhythmia, and 18 patients died.

The researchers found that their model accurately accounted for which patients would have life-threatening events. No patient with a five-year, model-predicted risk of five per cent or less had a serious arrhythmia.

More than 95 per cent of arrhythmias occurred in people with at least a 15 per cent five-year risk.

When the researchers compared their prediction accuracy rates with outcomes using a current consensus-based ICD placement algorithm, they found that about 20.6 per cent of recommended ICD placements would have likely been unnecessary.

“We believe our findings and the risk calculator we have developed have the potential to contribute to personalised medicine and to high value health care efforts emerging throughout medical care,” said Hugh Calkins, professor at the Johns Hopkins University.

Researchers said it can cost USD 20,000 to implant an ICD and a similar amount of money to replace the device when the battery wears out five to 10 years later. PTI

Heart disease

More children could mean higher risk of heart disease (New Kerala: 20190328)

<https://www.newkerala.com/news/read/118851/more-children-could-mean-higher-risk-of-heart-disease.html>

Parents who have five or more children may face a higher risk of heart disease than those who have only one or two, a recent study suggests.

As part of the study, a team of researchers looked at data from nearly 25,000 participants, aged 50 and older, who took part in a national health survey. The findings have been published in the Journal of Aging and Health.

"Many studies have linked women's reproductive characteristics, such as their age at their first childbirth, with their risk of heart disease later in life. But there wasn't much known about the association between family size and heart disease, and very few studies have looked at how fatherhood may relate to men's risk of heart disease," said Sara Hipp, lead researcher of the study.

The team of researchers found that 30 per cent of the parents who said they had five or more children had a heart condition such as coronary heart disease, angina or congestive heart failure.

Just 22 per cent of those who had only one or two children, and 21 per cent of those who had no children, said they had been diagnosed with a heart condition.

Among all the respondents, about one quarter said they'd been told by a doctor within the past two years that they had heart disease.

"Our data showed that, in both sexes, having more children was associated with a greater risk of heart disease," Hipp explained.

The link remained even when the researchers adjusted for other characteristics that can affect people's risk of heart diseases such as age, race, ethnicity, and birthplace.

In women, the association persisted even after researchers adjusted for lifestyle variables, such as whether they smoked or exercised at least twice a week.

Hearing loss

Hearing loss before 50 may raise drug abuse risk (New Kerala: 20190328)

<https://www.newkerala.com/news/read/118618/hearing-loss-before-50-may-raise-drug-abuse-risk.html>

People below 50 years who suffer from hearing loss are more likely to misuse opioids, alcohol and other drugs than their peers who have no such disorder, say researchers.

The findings showed adults under 35 years with a hearing loss were 2.5 times more likely to have a prescription opioid use disorder.

In addition, those between age 35 years and 49 years who had hearing loss were nearly twice as likely as their hearing peers to have disorders related to both prescription opioids and alcohol, said the study published in the American Journal of Preventive Medicine.

For the study, the team included 86,186 adults.

"Hearing loss is connected with a variety of health problems, including mental and physical health, which may place these individuals at risk for pain disorders. Also, the marginalising effects of hearing loss, such as social isolation, may be creating higher rates of substance use disorders too," said Michael McKee from University of Michigan in the US.

For those whose health care providers know of their hearing loss, McKee suspects that the higher rate of prescription opioid use disorder may stem from a higher rate of being placed on controlled substances to quickly address pain issues, perhaps because of communication barriers.

Male birth control pill

Male birth control pill passes human safety tests (New Kerala: 20190328)

<https://www.newkerala.com/news/read/118379/male-birth-control-pill-passes-human-safety-tests.html>

A new male birth control pill passed tests of safety and tolerability when healthy men used it daily for a month, a recent study has found.

According to researchers, the pills also produced hormone responses consistent with effective contraception.

The experimental male oral contraceptive is called 11-beta-methyl-19-nortestosterone dodecylcarbonate, or 11-beta-MNTDC.

"Our results suggest that this pill, which combines two hormonal activities in one, will decrease sperm production while preserving libido," said Christina Wang, lead researcher of the study, which was discussed in the ENDO 2019 meeting.

As part of the study, ten participants randomly received a placebo capsule or dummy drug. The other 30 men received 11-beta-MNTDC at one of two doses; 14 men received 200 milligrams or mg, and 16 got the 400 mg dose. Subjects took the drug or placebo once daily with food for 28 days.

Among men receiving 11-beta-MNTDC, the average circulating testosterone level dropped as low as in androgen deficiency, but the participants reportedly did not experience any severe side effects.

Wang said drug side effects were few mild and included fatigue, acne or headache in four to six men each. Five men reported mildly decreased sex drive, and two men described mild erectile dysfunction, but sexual activity was not decreased, she said.

Furthermore, no participant stopped taking the drug because of side effects, and all passed safety tests.

Effects due to low testosterone were minimal, according to the co-senior investigator, Stephanie Page.

"11-beta-MNTDC mimics testosterone through the rest of the body but is not concentrated enough in the testes to support sperm production," Stephanie said.

Levels of two hormones required for sperm production dropped greatly compared to placebo, the researchers found. The drug effects were reversible after stopping treatment, Wang noted.

Because the drug would take at least three 60 to 90 days to affect sperm production, 28 days of treatment is too short an interval to observe optimal sperm suppression, Wang explained.

They plan longer studies, and if the drug is effective, it will move to larger studies and then testing in sexually active couples.

"Safe, reversible hormonal male contraception should be available in about 10 years," Wang predicted.

Wang said most men are open to using this type of male birth control. She cited a multinational survey of 9,000 men published in the journal Human Reproduction in February 2005 that found that 55 percent of men in stable relationships want to try new, hormonal male contraceptive methods if they are reversible.

Bacteria

Bacteria travels thousands of miles via air: Study (New Kerala: 20190328)

<https://www.newkerala.com/news/read/118272/bacteria-travels-thousands-of-miles-via-air-study.html>

Bacteria travels thousands of miles, not on people or animals but through the air, finds a study that could shed light on harmful bacteria that share antibiotic resistance genes.

"Our research suggests there must be a planet-wide mechanism that ensures the exchange of bacteria between faraway places," said Konstantin Severinov, Professor at the Rutgers University-New Brunswick.

"Because the bacteria we study live in very hot water, about 160 degrees Fahrenheit, in remote places, it is not feasible to imagine that animals, birds or humans transport them. They must be transported by air and this movement must be extensive as bacteria in isolated places share common characteristics," Severinov said.

In the study, published in the journal Philosophical Transactions of the Royal Society B, Severinov analysed the "molecular memories" of bacteria from their encounters with viruses, with memories stored in bacterial DNA.

The scientists collected heat-loving thermus thermophilus bacteria in hot gravel on Mount Vesuvius and hot springs on Mount Etna in Italy, hot springs in the El Tatio region in northern Chile and southern Chile's Termas del Flaco region, and hot springs in the Uzon caldera in Kamchatka, Russia.

In bacterial cells infected by viruses, molecular memories are stored in special regions of bacterial DNA called CRISPR arrays.

Cells that survive infections pass the memories, small pieces of viral DNA, to their offspring. The order of these memories allows scientists to follow the history of bacterial interaction with viruses over time.

"What we found, however, is that there were plenty of shared memories -- identical pieces of viral DNA stored in the same order in the DNA of bacteria from distant hot springs," Severinov said.

"Our analysis may inform ecological and epidemiological studies of harmful bacteria that globally share antibiotic resistance genes and may also get dispersed by air instead of human travellers," he noted.

Antidepressants

Why do antidepressants fail for some (Medical New Today: 20190328)

<https://www.medicalnewstoday.com/articles/324809.php>

Research has revealed a biological explanation for why some people with depression do not respond to a class of antidepressants that doctors commonly prescribe. It has to do with fundamental differences in the nerve cells that produce and use serotonin.

close up of woman's hands taking pills

New research may explain why antidepressants do not always work.

Serotonin is the chemical messenger that has a major impact on feelings of happiness and wellbeing.

Scientists have long suspected that disruption in serotonin brain circuits is a key factor in major depressive disorder. Selective serotonin reuptake inhibitors (SSRIs) are a significant class of drug that seeks to remedy this disruption by increasing serotonin levels at nerve junctions.

However, for reasons that have been unclear, SSRIs do not work for around 30 percent of people with major depression. Now, researchers from the Salk Institute for Biological Studies in La Jolla, CA, and the Mayo Clinic in Rochester, MN, may have solved the mystery.

A Molecular Psychiatry paper describes how, by studying cells from hundreds of people with major depression, the team uncovered differences that could explain resistance to SSRIs.

"These results," says senior study author Fred H. Gage, who is president of the Salk Institute and also a professor in their Laboratory of Genetics, "contribute to a new way of examining, understanding, and addressing depression."

He and his colleagues believe that their findings also offer insights into other psychiatric illnesses that involve disruption of the brain's serotonin system, such as schizophrenia and bipolar disorder.

Depression and nerve cell response to SSRIs

Depression is a leading cause of disability that affects all ages and contributes in a major way to the "global burden of disease," according to the World Health Organization (WHO). The United Nations agency estimate that there are around 300 million people worldwide living with this widespread psychiatric condition.

In the United States, the National Institutes of Health (NIH) suggest that in 2017 around 17.3 million adults, or 7.1 percent of all adults, reported having "at least one major depressive episode" in the previous 12 months.

The FDA approve esketamine nasal spray for severe depression

The FDA approve esketamine nasal spray for severe depression

U.S. regulators have approved a prescription nasal spray for the treatment of depression that does not respond to other drugs.

For the recent study, the scientists took skin cells from more than 800 people with major depression and turned the cells into stem cells.

They then coaxed the stem cells to mature into "serotonergic neurons," which are the nerve cells that make up the brain circuitry for producing and using serotonin.

The team compared serotonergic neurons of "SSRI non-responders" with those of "SSRI responders." The non-responders were those individuals with depression whose symptoms showed no improvement, while the responders were those whose symptoms showed the most dramatic improvement to treatment with SSRIs.

In previous work, the researchers had demonstrated that cells from SSRI non-responders had more serotonin receptors, causing them to overreact to the chemical messenger.

Structural differences in nerve cells

The new study explored a different facet of SSRI non-response at the cell level. It found no differences between SSRI responder and non-responder cells in terms of the biochemistry of serotonin. However, it did reveal some fundamental structural differences in the cells.

These differences were in the shape and growth of neurites — or projections — that carry signals to and from nerve cells.

The development of the nervous system relies on tight control of neurite growth. Disruption of this process, according to a 2018 study, can lead to "developmental and neurological disorders."

The team found that the nerve cells of SSRI non-responders had much longer neurites than those of SSRI responders. Genetic analysis also uncovered much weaker expression of the genes PCDHA6 and PCDHA8 in the non-responder cells.

These two genes belong to the protocadherin family and play a key role in the growth and formation of nerve cells and brain circuits.

When they silenced PCDHA6 and PCDHA8 in healthy serotonergic neurons, the researchers found that these also grew unusually long neurites, just like the nerve cells of SSRI non-responders.

Having neurites of the wrong length can disrupt communication in serotonin brain circuits with some regions having too much traffic and others not enough. This could explain, says the team, why SSRIs sometimes fail to treat major depression.

"This paper," Prof. Gage concludes, "along with another we recently published, not only provides insights into this common treatment but also suggests that other drugs, such as serotonergic antagonists, could be additional options for some patients."

The team now intends to take a closer look at the role of the two protocadherin genes in SSRI non-responders.

"With each new study, we move closer to a fuller understanding of the complex, neural circuitry underlying neuropsychiatric diseases, including major depression."

Knee osteoarthritis

Knee osteoarthritis: A low-carb diet may relieve symptoms (Medical New Today: 20190328)

<https://www.medicalnewstoday.com/articles/324810.php>

A randomized controlled study finds that a diet low in carbs can relieve pain for people who have knee osteoarthritis.

senior looking at a tablet while surrounded by vegetables

Seniors with knee osteoarthritis may benefit from switching to a low-carb diet.

Osteoarthritis is the most widespread form of arthritis among older adults in the United States.

Knee osteoarthritis, in particular, affects about 10 percent of men and 13 percent of women ages 60 and above. According to some estimates, the condition affects 40 percent of people over the age of 70.

There is currently no cure for knee osteoarthritis, which can cause joint swelling, stiffness, and even severe pain.

Doctors often prescribe pain relievers, such as acetaminophen, opioids, or nonsteroidal drugs, to help alleviate symptoms. Knee replacement surgery is also an option.

However, these treatments are either invasive or could cause a range of unwanted side effects. This is why researchers have decided to investigate whether dietary interventions could relieve some symptoms and signs of knee osteoarthritis.

Robert Sorge, Ph.D., who is the director of the PAIN Collective in the University of Alabama at Birmingham Department of Psychology, led a randomized controlled study that compared the efficacy of two diets: one that is low in carbs and one that is low in fat.

Sorge and colleagues published their findings in the journal *Pain Medicine*.

Studying the benefits of a low-carb diet

The researchers tested the benefits of low-carb and low-fat diets among 21 adults aged 65–75 who had knee osteoarthritis.

The study participants followed either of the two diets or continued to eat normally for a period of 12 weeks.

Osteoarthritis: New compound may stop the disease

Osteoarthritis: New compound may stop the disease

The discovery could be a "game-changer," say the researchers.

READ NOW

Every 3 weeks, Sorge and colleagues analyzed the participants' functional pain — which is pain associated with daily tasks — as well as their self-reported pain, quality of life, and level of depression.

They also examined the participants' serum blood levels for oxidative stress, both at the beginning and the end of the interventions. Oxidative stress is a chemical imbalance between the production of free radicals and the body's antioxidant properties.

Scientists generally consider oxidative stress to be a marker of biological aging. In the current study, lower oxidative stress correlated with less functional pain.

The researchers found that the low-carb diet reduced functional pain levels and levels of self-reported pain. The benefits were particularly noticeable, in comparison with the low-fat and regular diets.

Finally, when adhering to the low-carb diet, the participants also showed less oxidative stress and lower levels of the adipokine leptin, a hormone with important metabolic functions.

The diet significantly reduces pain

"Our work shows [that] people can reduce their pain with a change in diet," comments the study's lead author.

"Many medications for pain cause a host of side effects that may require other drugs to reduce. The beneficial side effects of our diet may be things such as reduced risk for heart disease, diabetes and weight loss — something many drugs cannot claim."

"Diet is a great way to reduce the use of pain relievers and to improve general health," Sorge continues.

"Diet will never 'cure' pain, but our work suggests it can reduce it to the point where it does not interfere with daily activities to a high degree."

Robert Sorge, Ph.D.

Among people who consume meat, popular low-carb options include "lean meats, such as sirloin, chicken breast, and pork." Fish and eggs are also low in carbs, as are leafy green vegetables, including kale and spinach.

Cauliflower, broccoli, nuts, seeds, nut butter, coconut oil, olive oil, and dairy products are also good low-carb options. For those who wish to avoid animal products altogether, tofu and tempeh are great low-carb alternatives.

Depression

Can changes in brain energy pathways cause depression? (Medical New Today: 20190328)

<https://www.medicalnewstoday.com/articles/324801.php>

New research has identified mutations in the DNA code that may affect energy metabolism. It also found a link to major depressive disorder.

Girl with depression

Could mutations in mitochondria cause depression?

The World Health Organization (WHO) describe depression as "the leading cause of disability worldwide."

It affects more than 300 million people around the world.

Experts believe that many factors contribute to major depressive disorder (MDD).

These include genetics, environmental factors including abuse, brain physiology, and the immune system.

One theory is that disturbances in energy metabolism in the brain may contribute to a person developing MDD.

Conceptually, this is relatively easy to follow. The brain has a much higher requirement for energy than other organs. Any perturbations to this finely tuned system can have drastic consequences.

Medical News Today recently reported on a study in which researchers deleted the gene Sirt1 in forebrain excitatory neurons in male mice. The result was a stark reduction in the number of mitochondria in these cells, accompanied by depression-like symptoms.

Mitochondria, the so-called powerhouses of the cell, are specialized compartments that convert the food we eat into the chemical energy that our cells require to function. Each cell has many mitochondria to ensure a smooth supply of energy.

If we reduce their number or disrupt the intricate metabolic pathways, cells may die due to energy starvation.

In a paper published recently in the journal *Nucleic Acid Research*, scientists used bioinformatic tools to identify large mutations in the mitochondria's genetic code. They found a significant molecular signature of these in a subset of brain samples with MDD.

Identifying nearly 4,500 mutations

Genes within the mitochondria and some within the cell's nucleus are responsible for keeping the powerhouses going. Mutations in these genetic locations can cause mitochondrial diseases. A person can inherit these mutations, but they may also accumulate during their lifetime.

Scientists know that deletions, a type of DNA mutation wherein a large stretch of genetic code is missing, cause a number of mitochondrial diseases.

Lead study author Brooke E. Hjelm — an assistant professor of clinical translational genomics at the University of Southern California in Los Angeles — explained to MNT that researchers had already identified around 800 such deletions in the mitochondrial genome.

Heart disease and depression: Scientists find missing link

Heart disease and depression: Scientists find missing link

Scientists have found that heart disease and depression may share three common biomarkers.

READ NOW

"So," she said, "what I did was I exploited a tool that is already available to the research community called MapSplice and developed a process so that it could be used to detect and quantify mitochondrial deletions."

While Hjelm was confident that her analysis tool would allow her to identify many deletions in her samples, she was surprised to find quite so many.

In the 93 human samples — which came from 41 deceased individuals — included in the study, she discovered nearly 4,500 deletions.

However, not all of these mutations necessarily cause disease. If a mutation only occurs in a few of the mitochondria in a person's cell, the rest of the powerhouses can take up the slack. If it reaches a certain threshold, however, the cell may not be able to carry on functioning normally.

"One thing that I found particularly interesting was that many of the deletions I detected (especially those identified across many samples) had been previously identified in [those] with mitochondrial diseases," Hjelm explained.

"What this means," she continued, "is that there are deletions that had previously only been seen in one or a few [people] with a diagnosed mitochondrial disease suggesting they are rare, when in fact these deletions likely occur in all of us, they just aren't present at a high enough rate to cause disease."

A subset of MDD samples have deletions

Having developed the new bioinformatics tool, Hjelm and her colleagues set out to answer the following question: Do people with diagnosed psychiatric conditions have evidence of mitochondrial dysfunction in their brains?

Of the 41 people included in the study, nine had a diagnosis for MDD.

Hjelm found a large number of "high-impact" deletions, as she calls them in the study paper, in brain tissue from two of the individuals with MDD.

"What we are seeing in our data is that a subset of [people] with MDD have a large mitochondrial deletion in their brain [...]."

Brooke E. Hjelm

How exactly might deletions cause depression?

According to Hjelm, "The basic principle would be that your brain cells (neurons) require energy to function and communicate with one another properly, and because these cells aren't getting energy from enough healthy mitochondria, they can't relay messages from one region to another or respond to external stimuli the way they should."

She also shared some of the questions that remain, which includes gaining a better understanding of "which brain regions are susceptible to this and [...] what proportion of [people] with depression have this particular mitochondrial issue."

Determining who carries deletions in their mitochondrial genome will be a significant hurdle that the team will need to overcome. As removing brain tissue for diagnosis is not practical, Hjelm indicated that new brain imaging techniques or biomarker tests would be required.

Ultimately, Hjelm hopes that this will allow healthcare professionals to use a personalized medicine approach and tailor treatments that are most likely to address the underlying molecular causes of MDD in these people.

Atherosclerosis

Atherosclerosis: Scans spot inflammation in arteries before they harden (Medical New Today: 20190328)

<https://www.medicalnewstoday.com/articles/324802.php>

By the time plaques have formed in arteries, the process of atherosclerosis, a condition that can lead to heart attacks and strokes, is already well underway. Now, by using advanced imaging technology to spot artery inflammation, scientists have for the first time found a way to track the condition before the plaques develop.

older man about to have mri scan

Scientists are using advanced PET/MRI to predict atherosclerosis.

The finding, which appears in a recent Journal of the American College of Cardiology paper, should lead to better, earlier diagnosis and treatment of atherosclerosis, say the study's researchers, who work at the Centro Nacional de Investigaciones Cardiovasculares (CNIC) in Spain.

Although scientists now understand atherosclerosis to be a persistent, inflammatory disease, it is not clear how much inflammation exists, and how it develops, in the early stages of the condition.

The recent study addresses this shortfall by using an advanced form of positron emission tomography/magnetic resonance imaging (PET/MRI) to detect the beginnings of artery inflammation in people who already had some atherosclerotic plaques in some of their arteries.

The study is part of the Progression of Early Subclinical Atherosclerosis (PESA) trial that is evaluating the pre-symptom stages of atherosclerosis in more than 4,000 middle-aged employees of the Banco de Santander Group in Madrid, Spain.

Study author Dr. Valentín Fuster, director of the CNIC, is the lead investigator of the PESA trial, which is the first to use PET/MRI techniques on such a large cohort of people.

He explains that it was not very long ago that all the knowledge of how atherosclerosis developed came only from autopsies.

"Today for the first time," he adds, "we present, with very advanced imaging technology, how atherosclerotic disease develops in people."

He remarks that while the individuals may appear to be healthy, "we can already see how different aspects of the atherosclerotic process are evolving."

Arteries and atherosclerosis

Arteries are the vessels that carry nutrient- and oxygen-rich blood to the heart and the rest of the body.

Atherosclerosis happens when fat, calcium, cholesterol, and other materials deposit inside artery walls to form plaques. The plaques can build up inside any artery, including those that carry blood to the heart, brain, limbs, kidneys, and pelvic area.

Vascular risk factors tied to brain health

Vascular risk factors tied to brain health

Obesity, smoking, diabetes and other risk factors that affect blood vessel health can also be bad for the brain.

As time goes on, the plaques harden. Hardening plaques stiffen and narrow the arteries, reducing blood flow and the supply of oxygen and nutrients to cells and tissues.

This process can lead to potentially fatal cardiovascular consequences, such as heart disease, heart attack, and stroke.

According to figures that the American Heart Association help to compile, heart disease, stroke, and other cardiovascular conditions were the "underlying cause" of 840,678 deaths in the United States in 2016, accounting for around 1 in 3 deaths in the U.S. that year.

"We are talking about the number one killer today in the world," says Dr. Fuster.

Potential predictor of atherosclerotic plaques

Dr. Fuster and his colleagues demonstrated that inflammation of the arteries "is highly prevalent in middle-aged individuals with known subclinical atherosclerosis." This was particularly apparent in artery regions that had not yet developed plaques.

They suggest that "an arterial inflammatory state" could be a predictor for the later development of plaques and atherosclerotic disease.

The investigation involved analyzing advanced PET/MRI imaging results for 755 participants in the PESA trial. Their average age was 49 years, and they had all undergone exams that had revealed the presence of calcium buildup or plaques in some arteries.

First study author Leticia Fernández-Friera, who is a cardiologist at CNIC and the University Hospital HM Montepíncipe Madrid, says that they examined three main types of artery — "the carotid arteries, which supply blood to the head; the aorta, the body's largest artery; and the iliofemoral arteries, which supply blood to the legs."

Using the advanced imaging technology, the team found inflammation was evident in only around 10 percent of plaques that had already formed.

Most of the inflammation was in artery regions with no atherosclerotic plaques at all. More than half of individuals had this type of plaque-free inflammation, with most of it occurring in femoral arteries.

Where plaques did show signs of inflammation, they tended to be larger, contained more cholesterol, and were more likely to be in the branches of the femoral arteries.

Inflammation linked to more risk factors

Dr. Fernández-Friera says that they also found that "inflammation was associated with the presence of more risk factors; obesity and smoking, in particular, were independent predictors of the presence of arterial inflammation."

Dr. Fuster explains that the findings show how, because of the power of the technology, it is now possible to have "live images" of inflammation that can lead to atherosclerosis as it is happening.

This should help to diagnose the condition sooner and to identify people who are most likely to reap the benefits of early treatment.

Dr. Fuster proposes that further research should now "investigate whether inflammation precedes the development of the plaque and assess how the quantification of inflammation might contribute to the evaluation of cardiovascular risk."

He and his team are already looking in more detail at the process of arterial inflammation, and how it might contribute to plaque formation. They hope that this will result in an improvement in the anti-inflammatory treatment of atherosclerosis.

"Thanks to the PET/MRI technology, inflammation could be visualized at earlier stages of atherosclerosis disease, especially in regions free of atherosclerotic plaques."

गर्भनिरोधक

गहनों की तरह पहने जा सकेंगे गर्भनिरोधक (Dainik Gagan: 20190328)

https://epaper.jagran.com/epaper/article-28-Mar-2019-edition-delhi-city-page_5-11913-13095-4.html

वैज्ञानिकों ने एक ऐसी तकनीक ईजाद की है जिससे महिलाओं के लिए परिवार नियोजन बेहद आसान हो जाएगा। नई तकनीक से झुमके, अंगूठी और नेकलेस सरीखे गर्भनिरोधक गहनों के जरिये दवा को शरीर में पहुंचाया जाएगा। कंट्रोल्ड रिलीज जर्नल में प्रकाशित अध्ययन के अनुसार, त्वचा के संपर्क में रहने वाले गहने में लगाए गए पैच में गर्भनिरोधक हार्मोन भरा होगा। इससे दवा की खुराक शरीर में पहुंचती रहेगी।

हालांकि, अभी तक इंसानों पर परीक्षण नहीं किया गया है। इस तकनीक का मकसद नियमित रूप से दवा खाने से छुटकारा दिलाना है। जन्म नियंत्रण के लिए महिलाओं को नियमित रूप से गर्भनिरोधक गोलियां खाने की जरूरत पड़ती है।

अमेरिका के जार्जिया इंस्टीट्यूट ऑफ टेक्नोलॉजी के शोधकर्ता मार्क प्रुस्निट्स ने कहा, 'गहने पहनना महिलाओं की नियमित दिनचर्या का हिस्सा है। यह तकनीक दवा की खुराक के पालन की सुविधा मुहैया करा सकती है। यह उन महिलाओं के लिए ज्यादा प्रभावी हो सकती है जो अनचाहे गर्भ से बचना चाहती हैं।' गर्भनिरोधकों के अलावा ज्वेलरी आधारित इस तकनीक के जरिये त्वचा के रास्ते शरीर में अन्य दवाएं भी पहुंचाई जा सकती हैं।

अनियमित धड़कन

अनियमित धड़कन का पता लगाएगा कंप्यूटर टूल (Dainik Gagan: 20190328)

वैज्ञानिकों ने एक खास कंप्यूटर टूल विकसित किया है। इसकी मदद से हृदय की ऐसी दुर्लभ स्थिति का पता लगाया जा सकता है, जिससे जीवन के लिए खतरा उत्पन्न हो सकता है। अमेरिका की जॉन्स हॉपकिन्स यूनिवर्सिटी के शोधकर्ताओं ने यह टूल विकसित किया है। इससे गैरजरूरी सर्जरी से बचाव में मदद भी मिल सकती है। अनुमान के अनुसार, हर पांच हजार व्यक्तियों में एक आरथमोगेनिक राइट वेंटिकुलर कार्डियोमायोपैथी (सीआरवीसी) से पीड़ित है। यह हृदय के निचले चेंबर की जटिल और आनुवांशिक बीमारी है। शोधकर्ताओं का कहना है कि इस बीमारी से अचानक मौत हो सकती है। यह किशोरावस्था से अर्धे उम्र के दौरान हो सकती है। एक इंप्लान्टेबल कार्डियोवर्टर-डीफाइब्रिलेटर डिवाइस की मदद से सीआरवीसी को नियंत्रित किया जा सकता है। यह डिवाइस हृदय की मांसपेशियों में असामान्य स्थितियों का पता लगाने पर तुरंत धड़कनों को सामान्य कर देती है। -प्रेट्र

स्वाइन फ्लू ने दिल्ली में आठ साल का रिकॉर्ड तोड़ा

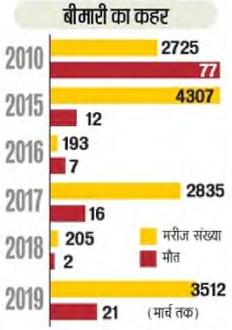
चिताजनक नई दिल्ली। हिंदी

राजधानी में स्वाइन फ्लू का कहर बढ़ता ही जा रहा है। इससे मरने वालों की संख्या इस वर्ष 2.4 मार्च तक 21 हो गई है, जो पिछले आठ साल में सबसे अधिक है। इससे पहले वर्ष 2010 में इससे मरने वालों की संख्या 72 थी। यह राष्ट्रीय आपदा निर्यंत्रण केंद्र (एनसीडीसी) द्वारा जारी आंकड़े में सामने आया है। मरने वालों में से छह दिल्ली के निवासी हैं। बाकी 15 अन्य राज्यों से हैं, जो यहां अपना इलाज कराने आए थे। राजधानी में स्वाइन फ्लू के इस

साल अभी तक 3500 से अधिक मामले सामने आए हैं। यह वर्ष 2010 के बाद दूसरी सबसे अधिक संख्या है। वर्ष 2010 में इस बीमारी से 2700 से अधिक लोग पीड़ित थे। वहीं, वर्ष 2015 में चार हजार से अधिक लोग स्वाइन फ्लू की चपेट में आए थे। **पड़ोसी राज्यों में अधिक संख्या :** स्वास्थ्य मंत्रालय के एक अधिकारी का कहना है कि दिल्ली में मरीजों की संख्या अधिक होने के पीछे आसपास से यहां आने वाले मरीज हैं। दिल्ली से सटे राज्यों में स्वाइन फ्लू की चपेट में आने वालों की संख्या अधिक है। अन्य राज्यों में स्थिति नहीं संभलने पर उन्हें दिल्ली रेफर कर दिया जाता है।



फरवरी के एक हफ्ते में ही 600 से ज्यादा मामले
वर्ष 2019 में फरवरी मध्य में सबसे अधिक मरीज सामने आए हैं। इस दौरान केवल एक सप्ताह के दौरान रिकॉर्ड 609 मामले सामने आए हैं। इसकी संख्या आने वाले महीनों में बढ़ने की संभावना है। खासकर मानसून के दौरान अधिक सावधानी बरतने की जरूरत है। वहीं दूसरी ओर सफ़दरजंग के एक अधिकारी का कहना है कि स्वाइन फ्लू से पीड़ित मरीज जब यहां पहुंचते हैं तो काफी देर हो जाती है। इस दौरान इलाज के लिए सबसे महत्वपूर्ण माने जाने वाला समय बर्बाद हो जाता है।



समय पर इलाज नहीं मिल पाता
सफ़दरजंग के एक अधिकारी का कहना है कि स्वाइन फ्लू से पीड़ित मरीज जब यहां पहुंचते हैं तो काफी देर हो जाती है। इस दौरान इलाज के लिए सबसे महत्वपूर्ण माने जाने वाला समय बर्बाद हो जाता है। अगर समय पर इस्काफ़ा पता चल जाए तो मरीज की जिंदगी बचाना आसान हो जाएगा।

जागरूकता बढ़ने से अधिक मामले सामने आ रहे
आरएमएल के एक डॉक्टर का कहना है कि लोग अब स्वास्थ्य के प्रति बेहद गंभीर हैं, इसलिए अब इस बीमारी की आशंका होने पर वे तुरंत जांच कराते हैं। इसके कारण भी अधिक संख्या सामने आ पा रही है।

hindustantimes

रात की पाली में काम करने से गर्भपात का खतरा ज्यादा



सेहत

लंदन | एजेंसी

गर्भावस्था के दौरान महिलाओं के लिए रात की पाली में काम करना काफी घातक हो सकता है। एक हालिया शोध में यह दावा किया गया है।

शोध के अनुसार, जो महिलाएं गर्भावस्था में हफ्ते में दो से तीन दिन रात की पाली में काम करती हैं उनमें गर्भपात होने का खतरा बढ़ जाता है। रात की पाली में महिलाओं को ज्यादा देर तक

कृत्रिम रोशनी में रहना पड़ता है जिससे हृदय की गति में गड़बड़ी हो जाती है। इससे मेलाटोनिन हार्मोन का स्त्राव कम हो जाता है। इसकी कमी से गर्भपात का खतरा बढ़ जाता है। डेनमार्क के फ्रेड्रिक्सबर्ग अस्पताल के डॉ. बिस्पेबर्ज के अनुसार रात की पाली में काम करने से भ्रूण में असामान्यता आ सकती है। 23 हजार गर्भवती महिलाओं पर किया गया शोध ऑक्यूपेशनल एंड इनवायरमेंटल मेडिसिन जर्नल में छपा है। पुराने शोधों में कहा गया था रात की पाली में काम करने वाली महिलाओं में जल्द रजोनिवृत्ति का भी खतरा बढ़ जाता है।