



DAILY NEWS BULLETIN

LEADING HEALTH, POPULATION AND FAMILY WELFARE STORIES OF THE DAY
Wednesday 20190410

Hyperactivity disorder

Identify children with attention deficit hyperactivity disorder: HC (The Hindu: 20190410)

<https://www.thehindu.com/news/cities/Delhi/identify-children-with-attention-deficit-hyperactivity-disorder-hc/article26786934.ece>

Tells govt to frame policies to train teachers to educate such kids

The Delhi High Court has asked the AAP government to identify children suffering from attention deficit hyperactivity disorder (ADHD), one of the most common mental disorders affecting children.

A Bench of Justice S. Ravindra Bhat and Justice Prateek Jalan also asked the Delhi government to frame policies to create training programmes for teachers and school staff to make education “meaningful and fulfilling” for children suffering from ADHD.

Parent moves court

The High Court’s order came while hearing a plea moved by a parent in which he claimed that his son was denied admission in 30 schools on the ground that he suffers from ADHD. In his plea, he alleged that Shri Ram Global School here had initially granted admission to the child, but then asked that he leave the institution. The allegation was denied by the school.

The High Court observed that ADHD per se is not included as a disability under the Persons with Disabilities Act 2016.

“However, having regard to the inclusive nature of the definition under the enactment, this court is of the opinion that the Government of NCT of Delhi, which has the responsibility to impart education and has framed laws and is also in-charge of ensuring universal access to education to all through the Right to Education, should examine the matter closely..,” the High Court said.

Excessive calcium supplements

Excessive calcium supplements may up cancer risk: Study (The Tribune: 20190410)

<https://www.tribuneindia.com/news/health/excessive-calcium-supplements-may-up-cancer-risk-study/755758.html>

Taking excessive calcium tablets may increase the risk of cancer, according to scientists who say that getting adequate nutrients from food sources is more beneficial than consuming supplements.

The study, published in the journal *Annals of Internal Medicine*, also showed that adequate intake of certain nutrients reduces risk of death from any cause, when nutrient source is foods, but not supplements.

Researchers found that supplemental doses of calcium exceeding 1,000 milligrammes per day is linked to an increased risk of cancer death, "As potential benefits and harms of supplement use continue to be studied, some studies have found associations between excess nutrient intake and adverse outcomes, including increased risk of certain cancers," said Fang Fang Zhang, associate professor at Tufts University in the US.

"It is important to understand the role that the nutrient and its source might play in health outcomes, particularly if the effect might not be beneficial," Zhang said.

The study used data from more than 27,000 US adults ages 20 and older to evaluate the association between dietary supplement use and death from all causes, cardiovascular disease (CVD), and cancer.

The researchers assessed whether adequate or excess nutrient intake was associated with death and whether intake from food versus supplement sources had any effect on the associations.

The researchers found that adequate intakes of vitamin K and magnesium were associated with a lower risk of death, while adequate intakes of vitamin A, vitamin K, and zinc were associated with a lower risk of death from CVD.

Excess intake of calcium was associated with higher risk of death from cancer, they said.

When sources of nutrient intake were evaluated, the researchers found that lower risk of death associated with adequate nutrient intakes was limited to nutrients from foods, not from supplements.

In addition, the researchers found that dietary supplements had no effect on the risk of death in individuals with low nutrient intake.

Instead, the team found indications that use of vitamin D supplements by individuals with no sign of vitamin D deficiency may be associated with an increased risk of death from all causes including cancer. Further research on this potential connection is needed.

"Our results support the idea that, while supplement use contributes to an increased level of total nutrient intake, there are beneficial associations with nutrients from foods that aren't seen with supplements," said Zhang. — PTI

Grass pollen can help predict asthma

Grass pollen can help predict asthma, hay fever (The Tribune: 20190410)

<https://www.tribuneindia.com/news/health/grass-pollen-can-help-predict-asthma-hay-fever/755745.html>

A team led by the University of Queensland (UQ) researchers, tracked grass pollen for seasonal variations and found it was released into the atmosphere later in areas further from the equator.

The presence of different strains of grass pollen in the atmosphere can help predict when hay fever and asthma could strike, researchers have found.

A team led by the University of Queensland (UQ) researchers, tracked grass pollen for seasonal variations and found it was released into the atmosphere later in areas further from the equator.

"Using this method, we may be able to better predict when allergenic pollen is present and allow people affected by asthma, chronic obstructive pulmonary disease (COPD) and rhinitis to more effectively manage their condition," said Nicholas Osborne, Associate Professor at UQ's School of Public Health.

"(And) with the advent of personalized medicine, more and more people are becoming aware of which allergen is responsible for their allergy," Osborne said.

He said the research would help allergy sufferers prepare for the hay fever season and doctors to prescribe more personalised treatments.

"People who fail to manage their asthma are at greater risk of asthma attack and being forced to visit hospital emergency departments," Osborne said.

"Having a more accurate forecast of when a patient is at risk will allow people to better manage their disease."

Scientists hope to expand on the research to create a unique profile of each grass pollen species to determine the most harmful strains.

For this, they are examining hospital and GP records and seeing if demand for these services involving asthma and rhinitis correlates with the presence of one grass species over another.

"Eventually—possibly within three to four years—we hope this will allow us to produce a better forecast of when and where exposure to pollen occurs," Osborne added. — IANS

Affordable generic drug

Affordable generic drug makers not in the pink of health (The Tribune: 20190410)

<https://www.tribuneindia.com/news/business/affordable-generic-drug-makers-not-in-the-pink-of-health/756117.html>

Reasons: Lack of govt support, chemists' reluctance to sell

Pharmaceutical companies manufacturing affordable generic drugs in the northern region are facing tough times even though medicines comprise 60% of the treatment cost. The industry is marred by challenges such as reluctance on the part of chemists to sell generic drugs, lack of government support and high raw material cost.

Moreover, prescribing generic drugs (with molecule name) instead of branded ones has been a contentious issue among the medical fraternity, affecting the industry. According to insiders, doctors face difficulty in prescribing combination drugs or medicines with multiple ingredients in generic form.

"The industry is facing many challenges which are hindering its growth. Firstly, doctors are reluctant to prescribe salts or molecules and instead prefer branded drugs. Secondly, chemists are reluctant to sell generic drugs because of thin margins. Thirdly, there is no government policy to incentivise and support the affordable generic drugs manufacturer," said Rajesh Dhingra, managing director, Dr Best Pharmaceuticals Pvt. Ltd.

As a result, the production of affordable generic drugs is very low as compared to branded generics. Since a large part of the country's population lives below the poverty line, making affordable medicines easily available is the need of the hour.

Normally, generic drugs are identified with their molecule name and not by their brand name. However, in India, almost 90% of the drugs (excluding over the counter drugs) are generic drugs sold under the brand name which tend to be expensive and command premium. Only 9-10% medicines are patented drugs.

According to WHO, a generic drug is a pharmaceutical product, usually intended to be interchangeable with an innovator product that is manufactured without a licence from the innovator company and marketed after the expiry date of the patent or other exclusive rights.

Arushi Jain, founder, StayHappy Pharmacy, said big companies (who got their patents approved a long time ago) are dictating the pricing due to their stronghold in the market.

According to experts, new companies are discouraged to invest in generic drugs market because of the cost involving new rounds of testing, procuring additional raw materials and going through extensive paperwork often surpasses the return on investment and does not justify taking the business risk.

"The market of raw materials is going through shortage, thus stifling the progress of the industry. Besides, stringent government rules on generic medicines pose a challenge to the generic drugs industry," said Jain.

The larger issue is not of pricing, but the quality of generic drugs. Established players are of the view that there is a need for drug quality assurance set-up before the prescription of drugs with generic names becomes a norm.

Bitter pill

Size of generic drug market (India): \$33 billion (2017)

Major manufacturing units: Himachal Pradesh, Punjab, Haryana

Share of affordable generic drugs: Less than 1%

‘India’s population

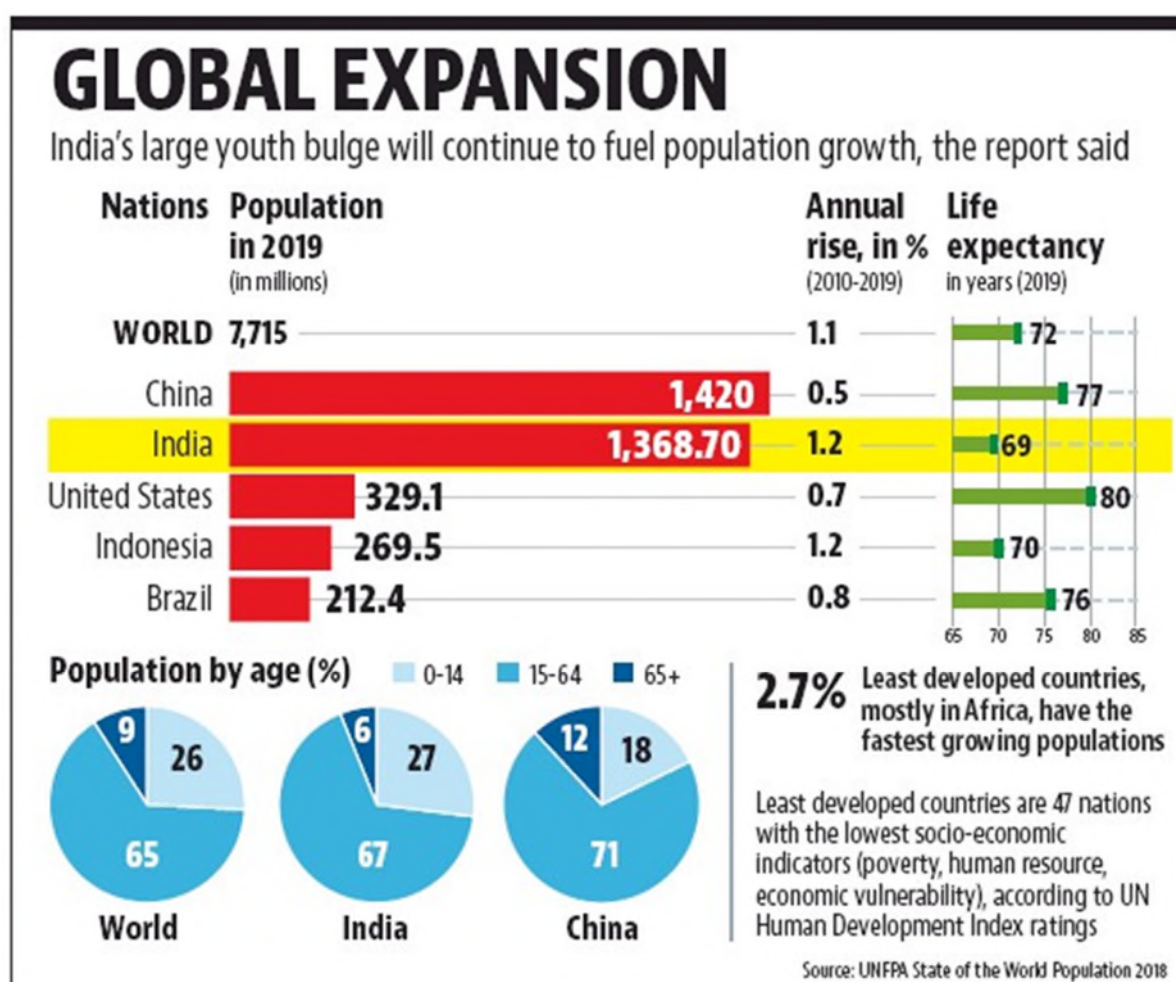
‘India’s population grew twice as fast as China’s’ (Hindustan Times: 20190410)

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

IN 9 YEARS UN report shows India’s population growth faster than world average

NEW DELHI: India’s population grew at 1.2% a year between 2010 and 2019, marginally higher than the global average of 1.1% a year in this period, but more than double China’s 0.5% a year, according to the United Nations Population Fund’s (UNFPA) State of the World Population 2018 report due to be released on Wednesday.

The world's population rose to 7.715 billion in 2019, up from 7.633 billion the year before, with the average life expectancy remaining 72 years.



Least developed countries recorded the highest population growth, with countries in Africa registering an average of 2.7% a year, said the report, which marks 50 years of the UNFPA being established to support countries to bring down fertility levels.

Much of the overall increase in global population till 2050 is projected to occur in high fertility countries, mostly in Africa, or in countries with large populations, such as India and Nigeria.

Around half India's population in 24 states have achieved so-called replacement fertility rates of 2.1 children per women, which is the desired family size when the population stops growing, but the country's large youth bulge will continue to fuel population growth even as the size of the ageing population increases.

"India must prepare for its growing ageing population by understanding the dynamics and riding its demographic dividend by making sure young people are well educated, healthy and contribute to society to help grow the economy and look after elderly going forward," said Klaus Beck, officer-in-charge, UNFPA India.

"Employment for young people is critical, as is developing public policies for the elderly on pension, services and support, and customised safety nets. You have to start thinking now. India still has time to prepare and learn from what other countries have done well and how it can be customised for India," Beck added.

The poorest 20% households have the largest unmet need for contraception and reproductive health services, with adolescents, disabled, unmarried young people, and the socially marginalised being the most deprived, said the report. The report also marks 25 years of International Conference on Population and Development (ICPD) in 1994, where 179 governments agreed on a rightsbased approach to sexual and reproductive health to address population growth. Maternal deaths have declined by at least 40% since 1994.

"India has made some groundbreaking shifts at the policy level and moved from a target approach to family planning services and methods to a rightsbased approach, but it has still not fully moved away from sterilisation incentives and disincentives, which should never have been used," said Poonam Muttreja, executive director, Population Foundation of India.

The challenge lies in the lastmile delivery of services. "Larger policies have changed and reproductive rights are now recognised legally, but little has changed on the ground. Women still account for at least than 93% of total sterilisations, even though male sterilisation is safer, quicker and easier," said Adsa Fatima, coordinator for the non-profit, SAMA Resource Group for Women and Health, which did a sexual and reproductive health assessment report for the National Human Rights Commission in April 2018.

"There is a consistent lack of implementation of a rights framework within government schemes and programmes, and the assessment showed discrimination and exclusion of a range of persons, gross neglect of reproductive deaths within government schemes and policies, and lack of access of safe abortion services," added Fatima.

There is no need for coercion as providing contraception and family planning services lowers family size, say experts. "Data shows the desired family size is 1.8 children among both poor and rich families. Uttar Pradesh, Bihar, Rajasthan and Madhya Pradesh have not reached desired fertility rates, but speeding up the roll-out of three new reversible spacing methods, especially to young people," said Muttreja.

Sex education is another unfinished agenda that needs to be addressed urgently to ensure young people have the information they need. “It’s not easy to change numbers at that scale, but India has showed commitment by putting in its own money in reproductive health services,” said Beck.

Deadly drug-resistant fungus’

Candida auris: Deadly drug-resistant fungus’ India connection (The Indian Express: 20190410)

<https://indianexpress.com/article/explained/candida-auris-deadly-drug-resistant-fungus-india-connection-5667624/>

The killer germ, a fungus called *Candida auris*, has showed up in countries as far apart as Australia and Canada, Venezuela and Japan, over the past few years. It has set alarm bells ringing because it is often resistant to multiple anti-fungal drugs.

candida auris, what is *candida auris*, drug resistant infections, mysterious global infections, dangerous infections, fungus, fungal infection, untreatable infections, latest health news, health news, indian express International media has been abuzz this week with reports of a mystery infection so tenacious that, The New York Times reported, a top American hospital had to rip out ceiling and floor tiles to get rid of the infestation in the room of a patient after his death. The killer germ, a fungus called *Candida auris*, has showed up in countries as far apart as Australia and Canada, Venezuela and Japan, over the past few years. It has set alarm bells ringing because it is often resistant to multiple anti-fungal drugs.

Candida auris

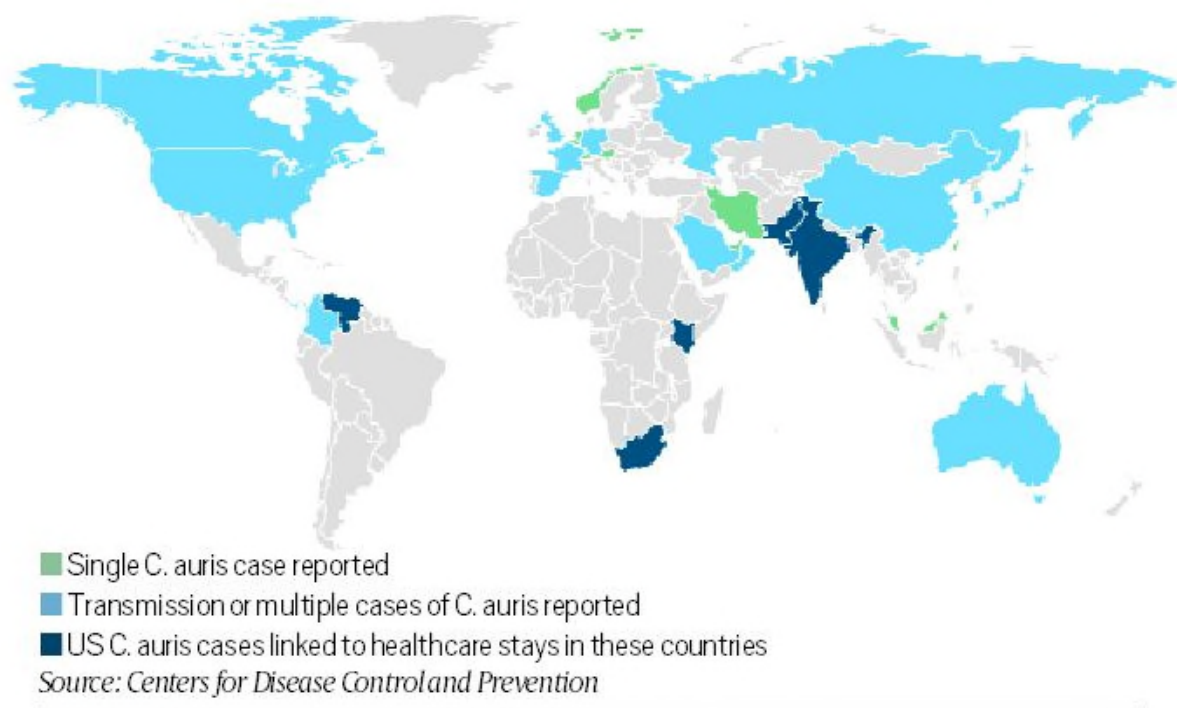
The US Centers for Disease Control and Prevention (CDC) describes *Candida auris* as “an emerging fungus that presents a serious global health threat”, and has sent severely ill patients to hospital in countries including Australia, Canada, China, France, Germany, India, Israel, Japan, Kenya, Kuwait, Oman, Pakistan, Russia, Saudi Arabia, Singapore, South Africa, South Korea, Spain, Venezuela, the UK, and the US. “Patients can remain colonised with *C. auris* for a long time and *C. auris* can persist on surfaces in healthcare environments. This can result in spread of *C. auris* between patients in healthcare facilities.”

That *C. auris* is difficult to identify with standard lab methods may have had a role to play in the development of its resistance. Healthcare personnel oblivious to it for long continue to prescribe antibiotics — giving the organism time to acclimatise to the medication. *C. auris* is known to cause outbreaks in hospitals, where it finds vulnerable individuals.

Not quite new

The current panic notwithstanding, the fungus has been around for at least a decade. It was identified in 2009 from yeast isolates from the ear of a Japanese patient, and described as a new species after RNA sequencing. In 2013, a team of Indian scientists led by those from the Vallabhbhai Patel Chest Institute, Delhi, documented in *Emerging Infectious Diseases* “the emergence of a new clonal strain of *C. auris* as an etiologic agent of candidemia in India”.

CANDIDA AURIS CASES WORLDWIDE



In 2017, the same team of researchers predicted that going by the behaviour of other similar organisms that have developed resistance, a *Candida* outbreak might be on the cards. “What we do know is that environmental factors probably play a role in outbreaks in healthcare settings that include prolonged survival in healthcare environments, probably due to skin colonization of patients and asymptomatic carriers... A further spread of *C. auris* in healthcare settings on a worldwide scale is expected,” the researchers, led by Dr Anuradha Chowdhary of the Department of Medical Mycology, Vallabhbhai Patel Chest Institute, wrote in *PLOS Pathogens*.

Precautions, treatment

The key is to prevent the fungus from spreading, so the management of the infection is hinged on isolation of the patient, ideally in a single room, with strict hand hygiene. CDC recommends that everyone who has come in contact with a patient should be screened for the fungus, and all equipment used for the care of the patient should be cleaned every day in accordance with clinical care recommendations.

Guidelines for treatment say that only when there are symptoms of an infection should the patient be given anti-fungals such as Caspofungin and Micafungin. CDC does not recommend treatment of *Candida* identified from noninvasive sites (such as respiratory tract, urine, and skin colonisation) when there is no evidence of infection.

Brain Zaps (The Asian Age: 20190410)

<http://onlinepaper.asianage.com/articledetailpage.aspx?id=12785243>

'Brain zaps boost memory in people over 60'

Boston: Zapping the brains of people over 60 with a mild electrical current can improve a form of memory — enough to make them perform like 20-year-olds — scientists say.

Someday, people might visit clinics to boost that ability, which declines both in normal ageing and in dementias like Alzheimer's disease, said Robert Reinhart, researcher at Boston University in the US.

The treatment is aimed at "working memory," the ability to hold information in mind for a matter of seconds as you perform a task, such as doing math in your head.

Sometimes called the workbench or scratchpad of the mind, it's crucial for



▶ The treatment is aimed at 'working memory,' the ability to hold information in mind for a matter of seconds as you perform a task, such as doing math in your head

things like taking medications, paying bills, buying groceries or planning, Reinhart said in a statement.

The study is not the first to show that stimulating the brain can boost working memory. The research, published in the journal *Nature Neuroscience*, showed success in older peo-

ple and because the memory boost persisted for nearly an hour minimum after the brain stimulation ended.

"It's a superb first step" toward demonstrating a way to improve mental performance, said Barry Gordon, a professor at the Johns Hopkins School of Medicine, who was not in-

involved in the study. More research is needed before it can be formally tested as a treatment, researchers said. The electrical current was administered through a tight-fitting cap that also monitored each subject's brainwaves.

For study participants, that current felt like a slight tingling, itching or poking sensation under the electrodes for about 30 seconds, Reinhart said.

The researchers' idea was to improve communication between the brain's prefrontal cortex in the front and the temporal cortex on the left side, because the rhythms of activity in those two regions had fallen out of sync with each other.

— PTI

Liver Transplant (The Asian Age: 20190410)

<http://onlinepaper.asianage.com/article/detailpage.aspx?id=12785742>

'Youngest' infant undergoes rare liver transplant

New Delhi, April 9: A five-month-old girl from Uttarpara in Hooghly district of West Bengal, who suffered from an acute liver failure, received a new lease of life when she underwent a 10-hour-long transplant surgery at a city hospital with the organ donated by her mother; doctors said on Tuesday.

Doctors at the hospital in south Delhi also claimed that she is the "youngest" infant in the country to receive liver transplant for acute liver failure.

Arijit Dey (36), Ariana's father, said his daughter had contracted "an abnormal level of jaundice" in

Longest kidney stone removed by Ganga Ram docs

AGE CORRESPONDENT
NEW DELHI, APRIL 9

Doctors at Sir Ganga Ram Hospital claimed to have removed the longest ureteric stone reported till date from the ureter of a patient with the help of surgical robot. The stone measured 22 cm and weighed 60 grams. The total length of the

ureter is approximately the same length. It is the longest ureteric stone reported till date. The longest ureteric stone reported until now was 21.5 cm.

Natasha, a resident of Saharanpur, was completely pain-free and unaware of the massive stone that lay inside her body. According to Dr

Sachin Kathuria, a consultant at the department of urology of the hospital, the use of surgical robot made it possible to remove such a long stone in a single surgery.

A team of doctors used a surgical robot to completely remove the stone in a single stage in an exhaustive procedure lasting 4 hours.

"There were several challenges in this surgery, which lasted for over 10 hours. First it was a case of acute liver failure, so we hardly had time to plan the surgery as we would do in normal transplant cases. Also, since the recipient was five-month-old and the donor was 30, the transplant was almost sculptural," he said.

"In a regular transplant, half of the liver is transplanted. However, in Ariana's case, we had surgically taken out a small portion from her mother's liver. So this was a big challenge," the doctor added.

—PTI

February and was diagnosed with a very high level of bilirubin few days later.

According to Dr

Subhash Gupta, the chairman of Liver and Biliary Sciences at the Max Super Speciality Hospital in Saket, Arijit was sup-

posed to donate his liver but there were some "medical compatibility issues" so the mother donated.

Population

What will happen if Uttar Pradesh is split into four parts? (The Times of India: 20190410)

<http://timesofindia.indiatimes.com/india/What-will-happen-if-Uttar-Pradesh-is-split-into-four-parts/articleshow/10776028.cms>

What will happen if Uttar Pradesh is split into four parts?

NEW DELHI: What will happen if Uttar Pradesh is split into four parts? What will the administrative units look like? What will the chessboard of politics in these new states look like?

This part of UP includes Jat land and has gained prosperity due to rich agriculture & sugarcane cultivation. Proximity to Delhi has developed Ghaziabad, Muzaffarnagar & Meerut into industrial hubs.

Population | 7.674 Crore

Per Capita Income | Rs 15,869.99

All UP | Rs 12136.69

Meerut division | Meerut, Bulandshahr, Gautam Budh Nagar, Ghaziabad, Baghpat and Panchsheel Nagar

Saharanpur division | Saharanpur and Muzaffarnagar, Prabuddha Nagar

Moradabad division | Moradabad, Bijnor, Rampur, Jyotiba Phule Nagar and Bhim Nagar

Bareilly division | Bareilly, Badaun, Pilibhit, Shahjahanpur

Agra division | Agra, Ferozabad, Mainpuri, Mathura

Aligarh division | Aligarh, Etah, Mahamaya Nagar, Kanshiram Nagar

Assembly Seats: 151

LS Seats: 30

Awadh Pradesh | 21 Districts

The area includes Awadh region once ruled by nawabs and taluqdars and known as granary of India because of its fertile Gangetic plain. The area has given three prime ministers to the country — Indira Gandhi, Rajiv Gandhi, and Atal Bihari Vajpayee. But most districts are still backward.

Population | 3.654 Cr

Per Capita Income | Rs 13,150.81

Faizabad division | Faizabad, Ambedkar Nagar, Sultanpur, Chhatrapati Shahuji Maharaj Nagar, Barabanki

Devipatan division | Gonda, Balrampur, Shravasti, Bahraich

Kanpur division | Kanpur, Ramabai Nagar, Auraiya, Farrukhabad, Kannauj, Etawah

Lucknow division | Lakhimpur, Lucknow, Sitapur, Hardoi, Unnao, Rae Bareli

Seats Assembly | 70

LS Seats | 14

Purvanchal | 21 Districts

The area is predominantly a Bhojpuri-speaking belt. The region also gave four PMs to India — Jawaharlal Nehru, Lal Bahadur Shastri, VP Singh and Chandra Shekhar. The land is favourable for agriculture but lack of resources has kept the area backward for years.

Population | 7.653 Cr

Per Capita Income | Rs 9,288.12

Allahabad division | Allahabad, Kaushambi, Fatehpur, Pratapgarh

Mirzapur division | Sant Ravidas Nagar, Mirzapur, Sonbhadra

Varanasi division | Varanasi, Jaunpur, Chandauli, Ghazipur

Azamgarh division | Azamgarh, Mau, Ballia

Gorakhpur division | Gorakhpur, Deoria, Kushinagar, Maharajganj

Basti division | Basti, Sant Kabir Nagar, Siddharth Nagar

Assembly Seats | 150

LS Seats | 32

Bundelkhand | 7 Districts

Known for its warrior queen, Jhansi's Rani Laxmi Bai, the region has faced neglect after Independence. Reeling under drought for last five years, over 80% of its people live in poverty

Population | 0.803 Cr

Per Capita Income | 12,878.02

People of Bundelkhand have been demanding separate statehood since long. It is the most backward region of the state with high poverty rate. The region also witnessed UP's first of farmer suicide cases due to crop failure & debt. The division of the state can benefit BSP the most as the region has a strong dalit base. Congress and SP will give BSP a tough fight. Smaller parties like Bundelkhand Congress can also get a few seats

Jhansi division | Lalitpur, Jalaun, Jhansi

Chitrakoot Dham division | Chitrakoot, Banda, Mahoba, Hamirpur

As far as partition of Uttar Pradesh is concerned, it appears to be a good decision of Govt of UP. Do not look for today, see 50 and 100 years ahead. It is good decision by any means. Only thing is B... Read More

Census 2021

Census 2021 will be powered by mobile phone app (The Times of India: 20190410)

http://timesofindia.indiatimes.com/articleshow/68798561.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

Heavy drinking and high-fat diet

Heavy drinking and high-fat diet go hand in hand due to same brain circuitry: Study (New Kerala: 20190410)

<https://www.newkerala.com/news/read/125363/heavy-drinking-and-high-fat-diet-go-hand-in-hand-due-to-same-brain-circuitry-study.html>

Heavy drinking and a high-fat diet are believed to go hand in hand. A new study in mice suggests that it is because of the same brain circuitry.

"Obesity and alcoholism, two of the most common chronic disorders in the United States, may be behaviorally linked as binge intake of palatable diets, such as diets high in fat, and binge alcohol intake may utilize the same neurocircuitry," said the researchers.

The research was conducted on early adult male mice and studied their drinking and eating patterns. They were classified into three groups.

First group 'High-fat Diet' had continuous access to a high-fat diet but controlled access to drinking water mixed with alcohol for four hours, four days a week.

The second group 'Normal Diet' a normal rodent diet and the same limited access to the alcohol beverage.

The third 'Binge Diet' had limited access to both the high-fat diet with a normal diet during non-access periods and the alcohol beverage.

Over the course of eight weeks, the ratio of alcohol to water was gradually increased from 10 to 20 per cent. Also, the animals were given free access to drinking water throughout.

The binge diet group showed a weight gain and loss cycle associated with binge eating. The mice drank more alcohol than water depicting a clear preference for alcohol. The other two groups consumed less alcohol than the binge diet group.

These results suggest that controlling the access to high-fat diets promotes binge-like eating patterns which signal the brain to binge on alcohol.

"Given the increasing rates of binge drinking and overall obesity rates in the U.S. in recent years, we think this new mouse model will be of critical importance in the near future," wrote Caitlin, first author of the study.

Innovative 5-minute workout

Innovative 5-minute workout that reduces heart-attack risk, boosts sports performance (New Kerala: 20190410)

<https://www.newkerala.com/news/read/125219/innovative-5-minute-workout-that-reduces-heart-attack-risk-boosts-sports-performance.html>

Working out for just five minutes can now reduce heart attack risks. A research has found an innovative five minutes workout that is not only time efficient but, reduces your heart attack risk, helps you think more clearly and boost your sports performance.

Preliminary results from a clinical trial of Inspiratory Muscle Strength Training (IMST), were presented at the Experimental Biology conference.

"IMST is basically strength-training for the muscles you breathe in with," said Daniel Craighead, lead author of the study.

Developed in the 1980s as a means to wean critically ill people off ventilators, IMST involves breathing in vigorously through a hand-held device - an inspiratory muscle trainer - which provides resistance. Imagine sucking hard through a straw which sucks back.

"It's something you can do quickly in your home or office, without having to change your clothes, and so far it looks like it is very beneficial to lower blood pressure and possibly boost cognitive and physical performance," he said.

During early use in patients with lung diseases, patients performed a 30-minute, low-resistance regimen daily to boost their lung capacity.

But in 2016, University of Arizona researchers published results from a trial to see if just 30 inhalations per day with greater resistance might help sufferers of obstructive sleep apnea, who tend to have weak breathing muscles.

In addition to more restful sleep, subjects showed an unexpected side effect after six weeks. Their systolic blood pressure plummeted by 12 millimetres of mercury. That's about twice as much of a decrease as aerobic exercise can yield and more than many medications deliver.

"That's when we got interested," said principal investigator Professor Doug Seals.

Systolic blood pressure, which signifies the pressure in your vessels when your heart beats, naturally creeps up as arteries stiffen with age, leading to damage of blood-starved tissues and a higher risk of heart attack, cognitive decline and kidney damage.

While 30 minutes per day of aerobic exercise has clearly been shown to lower blood pressure, only about 5 per cent of adults meet that minimum. Meanwhile, 65 per cent of mid-life adults have high systolic blood pressure.

"Our goal is to develop time-efficient, evidence-based interventions that those busy mid-life adults will actually perform," said Seals.

The preliminary results showed that with about half the tests done, the researchers have found significant drops in blood pressure and improvements in large-artery function among those who performed IMST with no changes in those who used a sham breathing device that delivered low-resistance.

The IMST group is also performing better on certain cognitive and memory tests.

When asked to exercise to exhaustion, they were also able to stay on the treadmill longer and keep their heart rate and oxygen consumption lower during exercise.

Some cyclists and runners have already begun to use commercially-available inspiratory muscle trainers to gain a competitive edge.

But Seals and Craighead stress that their findings are preliminary and curious individuals should ask their doctor before considering IMST.

That said, with a high compliance rate (fewer than 10 per cent of study participants drop out) and no real side-effects, they're optimistic.

"High blood pressure is a major risk factor for cardiovascular disease, which is the number one cause of death in America," said Craighead. "Having another option in the toolbox to help prevent it would be a real victory."

Hospital infections

Study explains how a pathogen causes hospital infections (New Kerala: 20190410)

<https://www.newkerala.com/news/read/125207/study-explains-how-a-pathogen-causes-hospital-infections.html>

Our mouth is home to hundreds of different bacterial species; a few of these oral bacteria are known pathogens. In a recent study, scientists have discovered that three closely related species of bacteria belonging to the family Enterobacteriaceae, known to cause infection in hospitals, outlived all other oral bacteria in long-term starvation or 'doomsday' experiment.

The findings of the study published in the 'Journal Proceedings of the National Academy of Sciences', help explain how certain dangerous bacteria are able to persist in a sterile hospital environment and infect patients.

Scientists know the genetic makeup of about 70 per cent of oral bacteria. What they don't know is which species would live the longest without nutrients in a 'battle royale', so they decided to find out.

To create a battle of bacteria, researchers placed hundreds of samples of oral bacteria from human saliva into test tubes. The bacteria, which are accustomed to living in the nutrient-rich mouth, were starved in their new environment. Each day, scientists checked the samples to see which bacteria were still alive.

Nearly every bacterial species died within the first couple of days. But three species- *Klebsiella pneumoniae*, *Klebsiella oxytoca*, and *Providencia alcalifaciens*- survived the longest, with *Klebsiella pneumoniae* and *Klebsiella oxytoca* surviving for more than 100 days.

Researchers were surprised to find that *Klebsiella* was among the champions of this bacterial combat. In their natural environment of the oral cavity, *Klebsiella* is considered an underdog.

They account for only about one per cent of all microbes in the mouth. But in an extreme environment deprived of all nutrients, *Klebsiella* reigned supreme while the bugs normally found in high abundance rapidly died off.

How did *Klebsiella* pull off such a feat? To answer this question, scientists analysed the genome of the bacteria on the first day of 'battle' and then again on day 100.

"When we look at the genome content, it turns out that these Enterobacteriaceae species have larger genomes than other oral bacteria, giving them the capacity to tap into more diverse energy sources," said Dr Xuesong He, a co-author of the study.

The researchers found that the *Klebsiella* had undergone genetic mutations that may have allowed them to survive and continue to function, even without a food source.

Scientists describe *Klebsiella* species as opportunistic pathogens. In healthy people, they live in the mouth peacefully, crowded by other microbes and unable to grow or cause trouble.

But outside the mouth, where few other bacteria survive, Klebsiella is king. They persist on hospital surfaces, like sinks or tables. If a patient with a compromised immune system makes contact with Klebsiella, that patient could develop an infection

"Oral fluids like saliva are a rich source of bacteria and viruses. We want to understand how pathogens, that are typically rare, can become dominant and then also persist for long periods outside the body to be later transmitted," explained co-author Dr Jeff McLean.

Infections by Klebsiella can result in a number of dangerous conditions including pneumonia and meningitis. One of the reasons Klebsiella infections are so dangerous is that Klebsiella is particularly adept at developing resistance to antibiotics, as well as transferring this drug resistance to neighbouring bacteria.

"The finding that these Klebsiella species survive longer than their more benign neighbours in mixtures of saliva is likely to have a great deal of clinical significance, as multiple virulent outbreaks of antibiotic-resistant Klebsiella have been traced back to hospital sinks and drains," said Dr Jonathon L. Baker, lead author of the study.

Healthy diet

Healthy diet associated with better physical function in older men (New Kerala: 20190410)

<https://www.newkerala.com/news/read/125203/healthy-diet-associated-with-better-physical-function-in-older-men.html>

A healthier diet pattern is associated with 25 per cent lower likelihood of developing physical impairment with aging, finds a new study.

A person's ability to maintain independence and to physically care for themselves is an essential part of healthy aging. Few studies have examined how a person's diet may allow some aging people to maintain physical function -- basic everyday tasks like bathing, getting dressed, carrying groceries or walking up a flight of stairs, while others' abilities diminish.

This study by investigators from Brigham and Women's Hospital examines the role of a healthy diet and finds that this highly modifiable factor can have a large influence on maintaining physical function.

The results of the study were published in 'Journal of Nutrition, Health and Aging'.

"Diet can have specific effects on our health and can also affect our wellbeing and physical independence as we get older," said senior author, Francine Grodstein.

"What excites me about our findings is the notion that we have some influence over our physical independence as we get older. Even if people can't completely change their diet, there are some relatively simple dietary changes people can make that may influence their ability to maintain physical function, such as eating more vegetables and nuts," Grodstein added.

Grodstein and her colleague Kaitlin Hagan examined data from a total of 12,658 men from the Health Professionals Follow-Up Study, tracking them from 2008 to 2012.

At the beginning of this period, all men were assessed for their ability to perform such activities as bathing/dressing themselves, walking one block, walking several blocks, walking more than one mile, bending/kneeling, climbing one flight of stairs, climbing several flights of stairs, lifting groceries, moderate activities, and vigorous activities.

The men also filled out a food frequency questionnaire with responses ranging from "never or less than once per month" to "six or more times per day."

The team used criteria from the Alternate Healthy Eating Index-2010 to assess the quality of each of the men's diets and assign an individual score. These criteria included six food categories for which higher intake are better (vegetables, fruit, whole grains, nuts and legumes, long-chain omega-3 fatty acids and polyunsaturated fatty acids).

One food category for which moderate intake is better (alcohol), and four categories for which lower intake is better (sugar-sweetened beverages and fruit juice, red and processed meats, trans fatty acids and sodium).

Grodstein and Hagan found that higher diet scores (meaning better diet quality) were strongly associated with decreased odds of physical impairment, including a 25 per cent lower likelihood of developing impairment in physical function with aging.

An overall healthy diet pattern was more strongly associated with better physical function than an individual component or food.

However, the team did see that greater intake of vegetables, nuts, and lower intake of red or processed meats and sugar-sweetened beverages each modestly lowered risk of impairment.

Food and Nutrition

Food as the source of nutrients is linked to lower risks of death: Researchers (New Kerala: 20190410)

<https://www.newkerala.com/news/read/125199/food-as-the-source-of-nutrients-is-linked-to-lower-risks-of-death-researchers.html>

A new study has revealed that consumption of certain nutrients is linked to lower risks of death if the source of those nutrients is foods rather than supplements.

The study was published in the Journal *Annals of Internal Medicine*.

"As potential benefits and harms of supplement use continue to be studied, some studies have found associations between excess nutrient intake and adverse outcomes, including increased risk of certain cancers," said Fang Fang Zhang, corresponding author on the study.

"It is important to understand the role that the nutrient and its source might play in health outcomes, particularly if the effect might not be beneficial," he added.

The researchers also found that excess calcium intake was associated with a high risk of cancer death. This was due to the supplemental doses of calcium exceeding 1000 mg/day.

Dietary intake of nutrients from foods was assessed using 24-hour dietary recalls. Mortality outcomes were obtained for each participant through linkage to the National Death Index through December 31, 2011, using a probabilistic match.

For the association between nutrient intake and risk of death, the researchers discovered that adequate intake of Vitamin K and magnesium indicated a lower risk of death.

An adequate intake of vitamin A, K and zinc indicated a lower risk of deaths from cardiovascular diseases.

While a surplus of calcium intake was associated with a higher risk of death from cancer.

When sources of nutrients (food vs. Supplement) were evaluated, the researchers found that an adequate intake of vitamin K and magnesium from foods, not from supplements had a lower risk of deaths.

A lower risk of death was associated with the intake of vitamin A, K and zinc from foods and not from supplements.

Similarly, calcium intake from supplements indicated an increased risk of death but when taken from food, there was no association with death.

"This study also confirms the importance of identifying the nutrient source when evaluating mortality outcomes."