

The Hindu Important News Articles & Editorial For UPSC CSE

Monday, 13 Jan, 2025

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केरल में जन्म दर में गिरावट के कारण मातृ मृत्यु दर में वृद्धि हो रही है, जिससे राज्य में सामाजिक ताना-बाना और जनसांख्यिकीय बदलाव प्रभावित हो रहे हैं।

Kerala's maternal mortality ratio climbs as fertility levels fall to a new low

C. Maya
THIRUVANANTHAPURAM

Kerala's maternal mortality ratio, the lowest in the country at 19 per one lakh live births, is now climbing steadily, much to the consternation of the State Health Department. The reasons for the increase may be beyond the control of officials.

The latest Sample Registration System special bulletin on maternal mortality in India (2018-20), brought out by the Registrar-General of India, put Kerala's MMR at 19. However, while it depended on a sample survey to arrive at the figure, the State Health Department's actual estimates of maternal deaths – Kerala has near 100% institutional deliveries – put the figure at 29.

Except during 2020-21, when Kerala lost many women to COVID-19 during pregnancy and childbirth, the State had consistently held a firm grip over mater-

nal mortality. Ironically, the current spike is not because more women are dying but because there are fewer childbirths than ever in the State.

The State has now hit a low of 3,93,231 births from an average of 5-5.5 lakh annually earlier, show the latest data of the Economics and Statistics Department of the State. It is this dip in the denominator that is pushing the MMR up and not necessarily an actual spike in maternal deaths.

The Health Department puts live births in the State between 3.4 lakh and 3.9 lakh currently. The full Vital Statistics Report (VSR) for 2023 is expected by January-end.

Impact on social fabric
The decline in fertility levels and changing demographics, many fear, are having an irrevocable impact on the State's social fabric, and have been at the heart of many policy-level discussions in Kerala, espe-

cially in the past three years.

From an average of 5.5 lakh annual births since the 1980s, the graph went below the five-lakh mark for the first time in 2016, when 4,96,262 live births were recorded. Since 2018, the figure has been plummeting steadily, never going above the five-lakh mark again. The last published VSR (2021) recorded the total number of live births as 4,19,767.

"As part of the Sustainable Development Goals, Kerala was targeting an MMR of 20 by 2030. However, that looks quite unlikely now, given that birth rates are falling steeply. We reckon the State's MMR in 2024-25 has already climbed to 32," says V.P. Paily, a senior consultant in Obstetrics and Gynaecology.

"It would now be a herculean task to hold the MMR at 20. Because, while we have successfully addressed all major medical

A worrying trend

Kerala's MMR is beginning to climb now because of fewer child births than ever in the State



Source: Sample Registration System bulletin of Registrar General of India

causes of maternal mortality, the issues that are impacting the State's MMR now are not something essentially within our control. We are seeing the impact of demographic changes in Kerala much earlier than we thought we would," Dr. Paily says.

"It has been three decades since the birth rate began falling in Kerala and the steep fall in the number of children born now is part of a larger trend. But the problem is that once the fertility rate comes

down, the graph rarely goes up because demographic transition is hard to reverse," says S. Irudaya Rajan, Chairman of the International Institute of Migration and Development (IIMAD).

Demographic transition
Kerala led the demographic transition in the South, attaining the replacement level fertility rate of 2.1 in 1987-88. Replacement level fertility is the average number of children a woman needs to have to replace

herself and her generation, so that the population is stable.

The State's total fertility rate (TFR) went below the replacement level in 1991 and remained stagnant at 1.8-1.7 for years, before touching 1.5 in 2020.

The current TFR of Kerala (2021 VSR) is 1.46. This means that a couple of reproductive age in Kerala mostly have only one child and sometimes none. It is possible that the TFR will drop to 1.35 once the latest data on live births are accounted for.

"Already, the impact of migration, especially the fact that a chunk of those in the reproductive age group are going abroad for higher education or jobs and choosing to settle down there, and the economic impact of the loss of a young workforce and changing attitudes regarding marriage and fertility are hurting us. In the next 10 years, the proportion of elderly population in Kerala

is expected to go above that of children and the magnitude of the issues related to the care and welfare of this population is likely to overwhelm us," Dr. Rajan says.

But the birth rate is expected to plummet further and the consequences will be starkly evident in the next two decades itself.

Not just declining birth rates, the State is also beginning to see the consequences of a higher age at marriage and delayed childbearing. The proportion of older mothers and the increase in pregnancy-related morbidities in this group and their reproductive health issues are emerging concerns, though the State is yet to adduce hard evidence to substantiate this.

"It has been over 35 years since we attained the replacement level fertility rate and the cohort of those women in the reproductive age of 15-49 we had then has now been re-

placed by a new cohort. The fertility is low in this new cohort of women, either by will or by nature, so naturally, the number of childbirths will go down. And even the number of women in this cohort has begun to dwindle," Sajini B. Nair, social scientist, Population Research Centre, says.

'Data not available'

By the Census 2011, the female population in the reproductive age group of 15-49 in Kerala was 93,32,494 and the Registrar-General's projected figure for 2021 was 92,23,500.

Meanwhile, the State had not published the VSR after 2021, claiming that there were reporting errors. There is also an ongoing debate about whether Kerala is registering its births properly and on time and the actual data on childbirths in the State collected by various official agencies are not available in the public domain now.

केरल का मातृ मृत्यु अनुपात (MMR)

- केरल का MMR बढ़ा है, जो एक लाख जीवित जन्मों पर 19 से बढ़कर 29 हो गया है।
- यह वृद्धि अधिक मातृ मृत्यु के कारण नहीं बल्कि कम प्रसव के कारण है।
- जीवित जन्मों की संख्या में गिरावट ने MMR को बढ़ा दिया है।
- केरल के MMR में उछाल जन्मों में सालाना 5-5.5 लाख से घटकर 3.93 लाख हो जाने के बाद आया है।
- 2020-21 में, गर्भवती महिलाओं में कई मौतें COVID-19 से जुड़ी थीं।

प्रजनन दर में गिरावट

- केरल की प्रजनन दर तीन दशकों से कम हो रही है।
- 1991 में, प्रजनन दर प्रतिस्थापन स्तर (प्रति महिला 2.1 बच्चे) से नीचे चली गई और 1.7-1.8 पर रही।
- 2020 में, कुल प्रजनन दर (TFR) घटकर 1.5 हो गई और वर्तमान में 1.46 है।
- TFR का मतलब है कि केरल में ज्यादातर जोड़ों के एक या कोई बच्चा नहीं है।
- राज्य की घटती जन्म दर के महत्वपूर्ण सामाजिक परिणाम हैं।

प्रवासन और सामाजिक परिवर्तनों का प्रभाव

- केरल में बहुत से युवा नौकरी या शिक्षा के लिए पलायन करते हैं, जिससे प्रजनन दर प्रभावित होती है।

- ▶ विवाह में देरी और बच्चे पैदा करने की प्रवृत्ति भी जन्म दर में गिरावट का कारण बनती है।
- ▶ अगले दशक में, केरल में बुजुर्गों की आबादी बच्चों की संख्या से ज़्यादा हो जाएगी, जिससे देखभाल और कल्याण के लिए चिंताएँ पैदा होंगी।

डेटा संग्रह में चुनौतियाँ

- ▶ केरल में जन्म पंजीकरण में समस्याएँ हैं, और 2021 के बाद जीवित जन्मों पर आधिकारिक डेटा सार्वजनिक रूप से उपलब्ध नहीं है।

USPC Mains Practice Question

प्रश्न: केरल जैसे राज्यों में जन्म दर में गिरावट के जनसांख्यिकीय परिवर्तन, सामाजिक ताने-बाने और नीति निर्माण पर पड़ने वाले प्रभावों पर चर्चा करें। (250 Words /15 marks)



नेवादा विश्वविद्यालय और मैक्स प्लैंक इंस्टीट्यूट के अनुसंधान ने दोहराव, मिथाइलेशन और यादृच्छिक अनुक्रमों के माध्यम से जीन निर्माण की खोज की।

An unlikely mystery: studies shed new light on how genes are made

In 1970, Japanese-American biologist Susumu Ohno proposed that the main source of new genes is gene duplication. When the body's genome has two copies of the same gene, one copy can continue to provide the original function while the other is free to mutate and acquire new functions

D.P. Kasbekar

The likeness of identical twins can be startling. They are alike because all their genes are alike. Genes are those segments of the genome where, if changes occur, the characteristics of an organism change. Non-identical twins vary in 50% of their genes and are much less alike. Thus, genes define our individuality in many ways.

In December 2024, two research groups addressed how new genes are created. The University of Nevada, Reno, group reported its findings in *Molecular Biology and Evolution*, and the other, from the Max Planck Institute for Evolutionary Biology Plön, Germany, reported in *Genome Biology and Evolution*.

The 24 molecules

A group of 24 molecules of DNA gives identity to our 24 chromosomes. These are the chromosomes numbered 1 to 22 and the sex chromosomes X and Y. Our cells contain two sets of the genome: one derived from the mother's egg and the other from the father's sperm. Eggs and sperm receive only one chromosome of each pair. When they fuse and form the zygote, the latter has two sets again. The zygote then multiplies to form a baby.

The cells in human bodies possess two copies of chromosomes 1-22. Biological females have two X chromosomes, whereas biological males have an X chromosome and a Y chromosome.

Identical twins arise from a single zygote, while non-identical twins arise from two zygotes produced simultaneously.

Each DNA molecule has two strands held together by bonds between compounds on the strands, called base pairs. Our genome contains 3.2 billion base pairs. A gene is typically a few-thousand base-pair-long segment of DNA.

When a gene is 'expressed,' it means a cell will transcribe the underlying base pair sequence to a molecule called messenger RNA (mRNA), and read the mRNA like a recipe to make a protein.

In the human genome, there are 20,000 protein-coding genes and 20,000 genes that cells use to create RNA that influences the expression of other genes. There are also some genes, called promoters and enhancers, which tell the cell when and where other genes are copied into mRNA.

Two compounds involved in forming the base pairs are cytosine and thymine. Sometimes the cytosine molecules bind to a methyl ion and are said to be methylated. A methylated cytosine



Each DNA molecule has two strands held together by bonds between compounds on the strands, called base pairs. Our genome contains 3.2 billion base-pairs. Representative illustration. GETTY IMAGES/ISTOCKPHOTO

molecule is likelier than an unmethylated one to mutate and become a thymine molecule.

Duplications create new genes

In 1970, Japanese-American biologist Susumu Ohno proposed that the main source of new genes is gene duplication. When the body's genome has two copies of the same gene, one copy can continue to provide the original function while the other is free to mutate and acquire new functions.

Ohno's proposal was simple but had one flaw: it didn't explain how the organism's cells would deal with producing twice the quantity of the same proteins as a result. Protein over-expression can lead to debilitating conditions. The University of Nevada, Reno, researchers addressed this problem.

Humans and mice last shared a common ancestor 75 million years ago. The researchers compared genes duplicated in human or mouse genomes, those duplicated in both, and those not duplicated in either.

They found the promoters of duplicated genes had more methylated DNA than the promoters of genes that hadn't been duplicated. Increased methylation would have prevented the cells from manufacturing twice as many proteins, minimising the ill effects of duplication and allowing the duplicate gene to survive long enough to acquire

Cells possess two copies of chromosomes 1-22. Females have two X chromosomes, whereas males have an X chromosome and a Y chromosome

new functions.

The researchers reported that the higher rate of methylation also elevated the rate of mutation.

Random sequences to incipient genes

The Max Planck Institute group inserted exogenous DNA into a population of cells derived from a human. (Exogenous means the DNA came from sources separate from the cells.) The researchers were careful to insert the DNA at a specific site in the genome and allowed the cells to make proteins with them. The exogenous DNA had a chunk that consisted of a random sequence of base-pairs – which means the proteins the cells made with it would be random as well.

The researchers put together a collection of cells of 3,708 types and nurtured them for 20 days. At regular intervals they checked the relative abundance of different cell types.

After 20 days, the team found that 53% of cell types had become less abundant, 8% more abundant, and 40% didn't swing either way. That is, more often than not, random DNA sequences affected cell

growth and thus became relevant for evolution to act upon.

In yet other words: the random DNA inserts behaved like incipient genes.

Keeping vs. chucking a gene

For a genome to retain a gene, it must have some use, or the genome allows it to mutate. But establishing a gene's usefulness is challenging.

Consider blood groups. Individuals can have one of four groups – A, B, AB or O – depending on which variants of the ABO gene they've inherited. If a person receives A and A or A and O, they have the A blood type. If they have B and B or B and O, they have the B blood type. If they have A and B or O and O, then they have the AB or the O blood types, respectively.

In sum, every individual lacks either one or two of the variants, which means no variant is really essential. The O variant also encodes a protein with no known function and whose amino acid sequence is markedly different from those encoded by A and B.

Primates and humans took different branches on the tree of evolution millions of years ago but share blood types – which is to say evolution both found a way and saw fit to retain all three variants in so many species for a very long amount of time. Scientists don't yet have a simple answer to why evolution has done this, but they aren't complaining.

(D.P. Kasbekar is a retired scientist. kasbekardp@yahoo.co.in)

THE GIST

A group of 24 molecules of DNA gives identity to our 24 chromosomes. Our cells contain two sets of the genome: one from the mother and the other from the father. Eggs and sperm receive only one chromosome. When they form the zygote, the latter has two sets again

In the genome, there are 20,000 protein-coding genes and 20,000 genes that are used to create RNA that influences the expression of other genes. There are also some genes, called promoters and enhancers, which tell the cell when and where other genes are copied into mRNA

Researchers found the promoters of duplicated genes had more methylated DNA. Methylation prevented the cells from manufacturing twice as many proteins, minimising the ill effects of duplication and allowing the duplicate gene to survive

Primates and humans took different branches on the tree of evolution millions of years ago but share blood types – which is to say evolution both found a way and saw fit to retain all three gene variants in so many species for a very long amount of time

जीन कैसे बनते हैं: नई शोध अंतर्दृष्टि

जीन दोहराव

◆ जीन दोहराव नए जीन बनाने में एक महत्वपूर्ण प्रक्रिया है।

- ▶ जब किसी जीन की नकल की जाती है, तो एक प्रतिलिपि अपना मूल कार्य बनाए रखती है, जबकि दूसरी प्रतिलिपि उत्परिवर्तित होने और नए कार्य विकसित करने के लिए स्वतंत्र होती है।
- ▶ शोधकर्ताओं ने पाया कि दोहराए गए जीन में अधिक मिथाइलेटेड डीएनए होता है, जो प्रोटीन के अतिउत्पादन को रोकने में मदद करता है।

मिथाइलेशन और उत्परिवर्तन

- ▶ मिथाइलेशन का अर्थ है डीएनए अणु में मिथाइल समूह का जुड़ना, जो इसके कार्य को प्रभावित करता है।
- ▶ मिथाइलेटेड जीन अधिक उत्परिवर्तित होते हैं, जो आनुवंशिक कार्यों में विविधता उत्पन्न करने में मदद करता है।

बहिर्जात डीएनए और यादृच्छिक अनुक्रम

- ▶ शोधकर्ताओं ने उनके प्रभावों का निरीक्षण करने के लिए मानव कोशिकाओं में यादृच्छिक डीएनए अनुक्रम डाले।
- ▶ इनमें से कुछ यादृच्छिक अनुक्रमों ने कोशिकाओं को बढ़ने में मदद की, जो प्रारंभिक चरण के जीन की तरह काम करते हैं जो विकसित हो सकते हैं।

उपयोगी जीन को बनाए रखना

- ▶ जीनोम में बने रहने के लिए, यह उपयोगी होना चाहिए या जीव को जीवित रहने की अनुमति देना चाहिए।
- ▶ गैर-आवश्यक जीन, जैसे रक्त प्रकारों के लिए, का कोई स्पष्ट कार्य नहीं हो सकता है, लेकिन विकास के कारण उन्हें बनाए रखा जाता है।

निष्कर्ष

- ▶ ये निष्कर्ष बताते हैं कि कैसे नए जीन दोहराव, उत्परिवर्तन और समय के साथ उपयोगी आनुवंशिक परिवर्तनों के अस्तित्व के माध्यम से उभरते हैं।

USPC Prelims PYQ

प्रश्न: निम्नलिखित में से कौन सा CRISPR-Cas9 तकनीक के कार्य का सबसे अच्छा वर्णन करता है?

- इसका उपयोग कोशिका विभाजन के दौरान डीएनए स्टैंड को दोहराने के लिए किया जाता है।
- यह लक्षित साइटों पर डीएनए को काटकर विशिष्ट जीन को संपादित करने में सक्षम बनाता है।
- यह प्रयोगशाला में आरएनए अणुओं को संश्लेषित करने में मदद करता है।
- इसका उपयोग किसी जीव के संपूर्ण जीनोम को अनुक्रमित करने के लिए किया जाता है।

उत्तर: b)

भारतीय मौसम विज्ञान विभाग (आईएमडी) 15 जनवरी, 2025 को अपनी 150वीं वर्षगांठ मनाएगा।

WHAT IS IT?

IMD: India's weather tracker

Vasudevan Mukunth

On January 15, 2025, the India Meteorological Department (IMD) will turn 150 years old.

The organisation was set up by the provincial British government in the country in 1875, and its first (Imperial) Meteorological Reporter was Henry Francis Blanford. The IMD's genesis can be traced to the importance of the monsoons over South Asia and the formation and effects of cyclones from the Indian Ocean.

Its formation was particularly accelerated by the 1864 Calcutta cyclone, which devastated the city and left more than 60,000 people dead, and the Orissa famine that followed just two years later because the monsoons had failed. So the government at the time decided to funnel weather data collected around the country into a single set of records, managed by a bespoke organisation. This organisation was the IMD.

It was originally headquartered in Calcutta but by 1944 had moved to New Delhi. In independent India, the IMD became a member of the World Meteorological Organisation in 1949.



Students taking part in an event to mark the 150th anniversary of the India Meteorological Department (IMD) in Chennai. ANI

The IMD currently operates six Regional Meteorological Centres, a Meteorological Centre in every State capital, plus a panoply of centres for various meteorological services. Aside from tracking and studying phenomena like rainfall and cyclones, the IMD helps record earthquakes and atmospheric pollution and generates alerts and warnings about impending anomalous weather. It also maintains a complicated communications system that collects data from a variety of sources, including ground observatories, naval vessels, atmospheric balloons, and satellites.

For feedback and suggestions

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with the subject 'Daily page'

भारत मौसम विज्ञान विभाग (IMD):

- ▶ भारत में ब्रिटिश सरकार द्वारा 1875 में IMD की स्थापना की गई थी।
- ▶ हेनरी फ्रांसिस ब्लैनफोर्ड इसके पहले मौसम संबंधी रिपोर्टर थे।
- ▶ दक्षिण एशिया में मानसून और चक्रवातों के महत्व के कारण IMD की स्थापना की गई थी।
- ▶ 1864 के कलकत्ता चक्रवात और 1866 में उड़ीसा के अकाल के कारण IMD का गठन हुआ।
- ▶ शुरुआत में कलकत्ता में स्थित, IMD 1944 में नई दिल्ली चला गया।
- ▶ भारत की स्वतंत्रता के बाद, IMD 1949 में विश्व मौसम विज्ञान संगठन में शामिल हो गया।
- ▶ IMD छह क्षेत्रीय मौसम विज्ञान केंद्र और प्रत्येक राज्य की राजधानी में एक मौसम विज्ञान केंद्र संचालित करता है।
- ▶ यह वर्षा, चक्रवात और भूकंप जैसी मौसम संबंधी घटनाओं पर नज़र रखता है।
- ▶ IMD जनता को मौसम संबंधी अलर्ट और चेतावनी जारी करता है।
- ▶ यह अपनी सेवाओं के लिए वेधशालाओं, नौसेना के जहाजों, गुब्बारों और उपग्रहों से डेटा का उपयोग करता है।

USPC Prelims Practice Question

प्रश्न: भारत मौसम विज्ञान विभाग (IMD) निम्नलिखित में से किस मंत्रालय के अंतर्गत आता है?

- पृथ्वी विज्ञान मंत्रालय
- पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय
- विज्ञान और प्रौद्योगिकी मंत्रालय
- गृह मंत्रालय

उत्तर: a)

आम आदमी पार्टी (आप) और भारतीय जनता पार्टी (भाजपा) ने दिल्ली विधानसभा चुनाव से पहले एक-दूसरे पर मतदाता सूची में हेरफेर करने का आरोप लगाया है, जिससे मतदाता पहचान-पत्र को आधार संख्या से जोड़ने पर बहस फिर से शुरू हो गई है।

Should voter IDs be linked with Aadhaar?

Why was the National Electoral Rolls Purification and Authentication Program launched by the Election Commission? How do already existing voters link EPIC with their respective Aadhaar numbers? What did the Supreme Court mandate in the Puttaswamy case in 2018?

EXPLAINER

Rangarajan. R

The story so far:

The Aam Aadmi Party (AAP) and the Bharatiya Janata Party (BJP) have accused each other of manipulating electoral rolls before the Delhi Assembly elections. This has reignited the debate about linking voter IDs/Election Photo Identity Card (EPIC) with respective Aadhaar numbers.

What is the history of the proposal?

The Election Commission (EC) had in February 2015 launched the National Electoral Rolls Purification and Authentication Program (NERPAP). This was to address the issue of duplicate entries in the electoral roll and to remove such entries. In order to achieve this, the EC began authenticating EPIC data by linking it with the Aadhaar database. It had linked more than 300 million voters in a span of three months. However, the Supreme Court in an interim order, in August 2015, held that the mandatory use of Aadhaar should only be for welfare schemes and PAN linking. Following this order, the NERPAP exercise was discontinued.

After the Supreme Court's final order in *Puttaswamy* in September 2018, that upheld the constitutional validity of the Aadhaar Act, the EC sought amendments to the Representation of the People Act, 1950 (RP Act, 1950). The Parliament amended the RP Act, 1950 and The Registration of Electors Rules, 1960 in December 2021 to enable the linking of EPIC with Aadhaar. It provided the format in which Aadhaar information may be submitted to the electoral registration officer by a new voter at the time of fresh registration (Form 6: to establish identity) or an existing voter already included in the electoral roll (Form 6B: for the purpose of authentication). Any other listed document may be submitted only if the voter is unable to furnish their



Need to verify: A special camp for linking Aadhaar with voter ID card held in Madurai in 2022. FILE PHOTO

Aadhaar number because they do not have one. However, in order to keep these amendments voluntary in nature, the word 'may' have been used in the amendments. Further, the amendment also specifies that no application for inclusion of name in the electoral roll shall be denied and no entries shall be deleted due to the inability of an individual to furnish or intimate the Aadhaar number due to 'sufficient cause.'

Such individuals may furnish alternate documents like PAN card, Driving Licence, Passport, Bank passbook etc.

While the above amendments were challenged in the Supreme Court, the EC

in September 2023 informed the court that submission of the Aadhaar number is not mandatory. It added that it is looking into issuing appropriate clarificatory changes in the forms introduced for this purpose. However, it may be noted that Form 6 and 6B have not been amended till date and they continue to seek the same details as before from the applicants.

The forms require the voters to declare that they do not have an Aadhaar number to avoid providing the same.

What are the pros and cons?

EPIC linkage with the respective Aadhaar

number would definitely help in weeding out duplicate entries; that is essential. At present, more than 650 million Aadhaar numbers have already been uploaded in the process of finalising the electoral rolls. However, there are some concerns about this exercise that need to be considered.

Firstly, the errors in the Aadhaar database, however minuscule, may result in wrongful rejection or deletion of entries from the electoral roll. Secondly, Aadhaar is only a proof of residence and not a proof of citizenship. Thus, it may not help in removing voters who are not citizens from the electoral roll. It would require a separate effort from the EC.

Finally, while the linkage is to happen at the back end and a mere mention of the Aadhaar number on the EPIC/electoral roll may not by itself be a violation of right to privacy, it may still result in misuse as the electoral rolls are widely circulated amongst political parties.

What can be the way forward?

The right to vote is a constitutional right and declared so by the Supreme Court in various cases. It is part of the basic structure of free and fair elections and cannot be constricted through legislative action. Citizens are the most important stakeholders in a democracy and any electoral process should gain their confidence. There must be wide publicity about the benefits of linking EPIC and Aadhaar to clean up the electoral roll of duplicate entries, which in turn strengthens the electoral process. Any misplaced concern amongst voters about the secrecy of their vote being compromised because of this linking should be assuaged.

Meanwhile, the forms should be suitably modified without any delay, to reflect that providing Aadhaar is not mandatory, as per the submission of the EC in the Supreme Court in September 2023.

Rangarajan R is a former IAS officer and author of 'Polity Simplified'. Views expressed are personal.

THE GIST

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प्रस्ताव की पृष्ठभूमि

- फरवरी 2015 में, चुनाव आयोग (EC) ने मतदाता पहचान-पत्र (EPIC) को आधार से जोड़कर डुप्लिकेट प्रविष्टियों को हटाने के लिए राष्ट्रीय मतदाता सूची शुद्धिकरण और प्रमाणीकरण कार्यक्रम (NERPAP) शुरू किया। तीन महीनों में 300 मिलियन से अधिक मतदाता जुड़े।

Daily News Analysis

- अगस्त 2015 में सुप्रीम कोर्ट ने हस्तक्षेप करते हुए फैसला सुनाया कि आधार का उपयोग केवल कल्याणकारी योजनाओं और पैन लिंकिंग के लिए किया जा सकता है, जिससे NERPA पर रोक लग गई।
- दिसंबर 2021 में, संसद ने जनप्रतिनिधित्व अधिनियम, 1950 में संशोधन किया, जिससे आधार को EPIC से जोड़ने की अनुमति मिल गई, जिससे यह स्वैच्छिक हो गया।
- यदि मतदाताओं के पास आधार नहीं है, तो वे पैन कार्ड या बैंक पासबुक जैसे वैकल्पिक दस्तावेज़ प्रदान कर सकते हैं।

संभावित निहितार्थ

- **चुनौतियाँ और चिंताएँ**
 - सितंबर 2023 में सुप्रीम कोर्ट को सूचित किया गया कि आधार संख्या प्रस्तुत करना अनिवार्य नहीं है।
 - ऐसी चिंताएँ हैं कि आधार डेटाबेस में त्रुटियों के कारण गलत मतदाता पंजीकरण या प्रविष्टियाँ हटाई जा सकती हैं।
 - आधार केवल निवास का प्रमाण है, नागरिकता का नहीं, इसलिए यह मतदाता सूची में गैर-नागरिकों की पहचान करने में मदद नहीं कर सकता है।
 - मतदाता सूची राजनीतिक दलों के साथ साझा किए जाने के कारण गोपनीयता संबंधी चिंताएँ हैं, जिससे आधार की जानकारी का दुरुपयोग हो सकता है।
- **पक्ष और विपक्ष**
 - पक्ष: आधार को EPIC से जोड़ने से डुप्लिकेट मतदाता प्रविष्टियाँ हटाने में मदद मिलती है। 650 मिलियन से अधिक आधार संख्याएँ पहले ही अपलोड की जा चुकी हैं।
 - विपक्ष: आधार डेटाबेस में त्रुटियाँ मतदाता पंजीकरण को प्रभावित कर सकती हैं, और आधार नागरिकता साबित नहीं करता है, जिससे गैर-नागरिकों को हटाने में इसकी प्रभावशीलता सीमित हो जाती है।
- **आगे की राह**
 - मतदान एक संवैधानिक अधिकार है, और चुनावी प्रक्रिया में जनता का विश्वास महत्वपूर्ण है।
 - मतदाता सूची को साफ करने के लिए आधार को जोड़ने के लाभों के बारे में जागरूकता होनी चाहिए।
 - मतदाता पंजीकरण फ़ॉर्म को इस तरह से अपडेट किया जाना चाहिए कि यह दर्शाया जा सके कि आधार जमा करना स्वैच्छिक है, जैसा कि सुप्रीम कोर्ट के 2023 के निर्णय में कहा गया है।

USPC Mains Practice Question

प्रश्न: चुनाव सुधारों के संदर्भ में आधार को मतदाता पहचान-पत्र से जोड़ने के निहितार्थों पर चर्चा करें। इस लिंकेज के संभावित लाभ और चुनौतियाँ क्या हैं? (150 Words /10 marks)

In News : Pink Fire Retardent

लेख में जंगली आग पर काबू पाने में गुलाबी अग्निरोधी पदार्थों के उपयोग की जांच की गई है।



समाचार का विश्लेषण:

पिंक फायर रिटार्डेंट क्या है?

- ▶ पिंक फायर रिटार्डेंट, मुख्य रूप से फॉस-चेक, एक रासायनिक घोल है जिसका उपयोग जंगल की आग को फैलने से रोकने या धीमा करने के लिए किया जाता है।
- ▶ इसका मुख्य घटक अमोनियम फॉस्फेट-आधारित घोल है, जिसे अमोनियम पॉलीफॉस्फेट जैसे लवणों के साथ मिलाया जाता है।
- ▶ इस घोल को आग लगने से पहले वनस्पतियों को ढंकने और ऑक्सीजन की आपूर्ति को बाधित करने के लिए छिड़का जाता है, जिससे ज्वलनशीलता कम हो जाती है।
- ▶ चमकीला गुलाबी रंग अग्निशामकों के लिए दृश्यता सुनिश्चित करता है, जिससे आग को रोकने के लिए आग की रेखाएँ बनाने में सहायता मिलती है।

प्रभावशीलता और सीमाएँ

- हालाँकि पिक फायर रिटार्डेंट लंबे समय से अग्निशमन उपकरण हैं, लेकिन उनकी प्रभावशीलता पर बहस होती रहती है।
- अध्ययनों से पता चलता है कि उनकी सफलता इलाके, ईंधन के प्रकार और मौसम की स्थिति जैसे चर पर निर्भर करती है।
- उनकी भूमिका को अलग करना अक्सर मुश्किल होता है, क्योंकि उनका उपयोग अन्य दमन युक्तियों के साथ किया जाता है।
- आलोचकों का तर्क है कि जलवायु परिवर्तन के कारण वे सीमित परिस्थितियाँ कम होती जा रही हैं, जिनमें वे प्रभावी हैं।

पर्यावरण संबंधी चिंताएँ

- **हवाई अग्निरोधी पदार्थों के उपयोग से महत्वपूर्ण पर्यावरणीय मुद्दे उठते हैं:**
 - विषाक्त धातुएँ: शोध से पता चलता है कि फॉस-चेक में क्रोमियम और कैडमियम जैसी हानिकारक धातुएँ होती हैं, जो कैंसर, किडनी और यकृत रोगों का जोखिम पैदा करती हैं।
 - जलमार्गों पर प्रभाव: नदियों और नालों में प्रवेश करने वाले मंदक जलीय जीवन को नुकसान पहुँचाते हैं, भारी धातुएँ दीर्घकालिक पारिस्थितिक क्षति का कारण बनती हैं।
 - प्रदूषण: 2009 और 2021 के बीच, 440 मिलियन गैलन से अधिक मंदक का उपयोग किया गया, जिससे पर्यावरण में अनुमानित 400 टन भारी धातुएँ निकलीं।

India's data protection rules need some fine-tuning

On January 3, 2025, the Ministry of Electronics and Information Technology (MeitY) released the much-anticipated Draft Digital Personal Data Protection (DPDP) Rules – a key moment in India's journey to regulate digital personal data. This step follows the passage of the DPDP Act, 2023, bringing India closer to operationalising its framework for safeguarding personal data.

The draft rules represent a departure from the earlier and controversial Personal Data Protection Bill, which many deemed was overly restrictive and even hostile to industry interests. The Bill underwent extensive framing, reframing and consultations over nearly a decade, only to be rescinded when committees and government stakeholders wisely decided it was untenable.

In contrast, the positive response to the DPDP Act and its accompanying rules, reflected in conversations with businesses and in media coverage, stems from the less prescriptive, principles-based approach of the draft rules.

Unlike the earlier rush to regulate under the so-called "Brussels Effect", where global digital rulemaking mirrored the European Union (EU)'s interventionist regulatory ethos, India has taken a more pragmatic stance. The EU's General Data Protection Regulation (GDPR), once hailed as a gold standard by privacy experts, now faces criticism for unintended consequences – favouring well-resourced corporations, stifling smaller enterprises, and failing to significantly enhance public trust in the Internet. India's measured approach thus far offers a refreshing alternative to Europe's interventionist policies.

The hits as pragmatism and flexibility

One of the draft rules' standout features is their principles-based framework for notice and consent. While the GDPR has cumbersome requirements, such as notifying users of indirect data acquisition, cross-border data transfers, and automated decision-making processes, India's rules emphasise simplicity and clarity. This helps reduce "consent fatigue", a significant issue in Europe, where users are inundated with unnecessary details, such as the location of data processing – information of little practical use.

In 2023, the European Commission introduced the Cookie Pledge Initiative to address growing frustration over incessant consent pop-ups. However, such course correction would have been unnecessary had the EU taken a less invasive approach to regulating user interfaces and consent mechanisms. The very existence of this pledge highlights the burdens created by prescriptive regulation.

India's DPDP Rules sidestep these pitfalls by focusing on outcomes rather than processes, empowering users without drowning businesses and consumers in unnecessary complexities. The



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rules avoid dictating how entities should enable users to exercise their rights to correction, erasure, nomination, withdrawal of consent and to seek information from entities. They require only the publication of relevant information on apps and websites. In contrast, the GDPR is prescriptive about how similar information should be presented, including instances where entities may need to provide this information orally to users. Why should the state dictate every aspect of an app or website's design or user interface? India's approach, thankfully, respects business autonomy and innovation.

The processing of children's personal data requires stricter protection compared to other types of data processing – which the rules provide for. However, as more children engage with digital technologies online, they increasingly benefit from certain activities, such as monitoring and tracking, which are of value in specific contexts. Take the case of educational institutions, including supplementary education and vocational training services. They rely on activities such as behavioural monitoring and tracking to deliver targeted interventions tailored to students' academic performance. These practices leverage the benefits of learning management systems, which personalise instruction and improve educational outcomes. Recognising this, the rules thoughtfully allow exemptions for specific industries. Educational institutions, clinical and mental health establishments, allied health-care providers, and child-care centres are not required to verify parental consent for tracking and behavioural monitoring, as long as they adhere to guardrails. The exemption for such industries demonstrates a nuanced understanding of industry-specific needs, reflecting the principles of thoughtful policymaking.

The misses as data localisation, overreach

However, the draft rules are not without flaws. Their provisions for restricting cross-border data flows introduce unnecessary complexity and ambiguity. Significant Data Fiduciaries (SDFs) – large enterprises handling substantial data volumes – face potential localisation mandates that extend beyond the legislation's original scope. While the DPDP Act allows the government to restrict personal data transfers, it limits such action to specific notified countries. Differentiating between SDFs and smaller entities, where the second enjoy relaxed transfer rules for the same data, creates the risk of regulatory arbitrage. Smaller entities could exploit the lighter regime to gain an unfair advantage. These inconsistencies may deter investment and drive businesses out of India. The localisation provision likely stems from the challenges faced by law

enforcement agencies in accessing cross-border data for investigations. While these agencies undeniably need access to such data, a narrower sectoral approach to localisation could prove more effective than a centralised one. The Reserve Bank of India's 2018 mandate for localising payment data is a prime example of proportionate regulation. Tailored specifically to the financial sector, it effectively addressed legitimate industry concerns without causing too many business disruptions. Applying this approach to personal data could balance security and compliance with economic competitiveness.

Some areas still require greater clarity. Businesses need safeguards to verify whether users requesting information about data processing are legitimate. This necessity is acknowledged even in the GDPR. However, India's draft rules do not address scenarios where businesses face incessant information requests or provide scope for businesses to charge a reasonable fee for requests which are excessive or even unfounded. A related ambiguity is whether the government can demand access to sensitive business data. If so, how will it ensure the protection of such information from falling into the hands of competitors? What if this information is a trade secret? These gaps highlight the need for thinking about procedural integrity.



What lies ahead

According to IBM, data breaches cost Indian businesses an average of ₹19.5 crore (\$2.35 million) in 2024. Compliance with data protection laws should not be seen as a regulatory obligation, but as critical to protecting business reputation and ensuring continuity.

India must also move beyond reliance on notice-and-consent mechanisms to safeguard citizens' privacy in future laws. Notice and consent originate from the medical profession, where they can still be deemed to work effectively in controlled settings. However, in environments such as malls, airports, or even beaches, individuals have little opportunity to provide consent. With the convergence of the Internet of Things, 5G, and artificial intelligence enabling unprecedented data collection, India must envision privacy frameworks that do not exclusively rely on the fallible principle of consent. As public consultations refine the draft rules, prioritising preservation of the framework's flexibility and industry-specific accommodations is key. This approach will help maintain a balance between innovation, economic growth, and individual rights – something not many jurisdictions have managed to get right.

The largely positive response to the Draft Digital Personal Data Protection (DPDP) Rules flows from its less prescriptive, principles-based approach

GS Paper 02 : शासन

UPSC Mains Practice Question: भारत की डेटा सुरक्षा व्यवस्था को आकार देने में ड्राफ्ट डिजिटल व्यक्तिगत डेटा संरक्षण (डीपीडीपी) नियम, 2025 के महत्व पर चर्चा करें। (150 Words /10 marks)

संदर्भ :

- ▶ 3 जनवरी, 2025 को इलेक्ट्रॉनिक्स और सूचना प्रौद्योगिकी मंत्रालय (MeitY) ने ड्राफ्ट डिजिटल पर्सनल डेटा प्रोटेक्शन (DPDP) नियम जारी किए।
- ▶ DPDP नियम पहले के पर्सनल डेटा प्रोटेक्शन बिल से एक बदलाव का प्रतिनिधित्व करते हैं, जिसे अत्यधिक प्रतिबंधात्मक माना जाता था।

डेटा सुरक्षा के लिए एक व्यावहारिक दृष्टिकोण

- ▶ DPDP नियम यूरोपीय संघ के GDPR के विपरीत एक लचीला और सिद्धांत-आधारित दृष्टिकोण अपनाते हैं, जो अधिक कठोर है।
- ▶ GDPR की आलोचना बड़ी कंपनियों को लाभ पहुँचाने, छोटे व्यवसायों को नुकसान पहुँचाने और ऑनलाइन डेटा हैंडलिंग में जनता का विश्वास बनाने में विफल रहने के लिए की गई है।
- ▶ भारत के नियम व्यवसाय के लचीलेपन और नवाचार पर ध्यान केंद्रित करके ऐसे मुद्दों से बचते हैं।

ड्राफ्ट नियमों की मुख्य विशेषताएँ

- ▶ **सरलीकृत सूचना और सहमति ढाँचा**
 - नियम सहमति को स्पष्ट और सरल बनाने पर ध्यान केंद्रित करते हैं, अनावश्यक विवरणों से बचते हैं।
 - व्यवसायों को उपयोगकर्ता इंटरफ़ेस के लिए सख्त दिशानिर्देशों का पालन किए बिना केवल महत्वपूर्ण जानकारी प्रकाशित करने की आवश्यकता है।

बच्चों के डेटा की सुरक्षा

- बच्चों के डेटा को सख्त सुरक्षा दी गई है, लेकिन शिक्षा और स्वास्थ्य सेवा जैसे कुछ उद्योगों को सोच-समझकर छूट दी गई है।
- उदाहरण के लिए, जब तक सुरक्षा उपाय लागू हैं, स्कूल माता-पिता की सहमति के बिना सीखने में सुधार के लिए छात्र व्यवहार को ट्रैक कर सकते हैं।

चुनौतियाँ और चिंताएँ

➤ डेटा स्थानीयकरण आवश्यकताएँ

- बड़े व्यवसायों, जिन्हें महत्वपूर्ण डेटा फ़िड्यूसरी (SDF) कहा जाता है, को भारत के भीतर डेटा संग्रहीत करने की आवश्यकता हो सकती है, जो निवेश को हतोत्साहित कर सकता है।
- RBI के भुगतान डेटा नियमों की तरह एक क्षेत्र-विशिष्ट दृष्टिकोण बेहतर काम कर सकता है।

प्रावधानों में अस्पष्टताएँ

- व्यापारियों में अत्यधिक या अनुचित डेटा अनुरोधों को संभालने में स्पष्टता का अभाव है।
- इस बात को लेकर चिंताएँ हैं कि क्या सरकार संवेदनशील व्यावसायिक डेटा तक पहुँच सकती है और यह व्यापार रहस्यों की सुरक्षा कैसे करेगी।

भविष्य के विचार

- 2024 में, डेटा उल्लंघनों से भारतीय व्यवसायों को औसतन ₹19.5 करोड़ का नुकसान होगा, जो बेहतर डेटा सुरक्षा की आवश्यकता को दर्शाता है।
- भारत को सहमति से परे गोपनीयता समाधान तलाशने चाहिए, खासकर IoT, 5G और AI जैसी तकनीकों के साथ जो बड़ी मात्रा में डेटा एकत्र करते हैं।
- सार्वजनिक परामर्शों को लचीलेपन, उद्योग की ज़रूरतों और व्यक्तिगत अधिकारों को संतुलित करने के लिए नियमों को परिष्कृत करना चाहिए।

निष्कर्ष

- DPDP नियम एक व्यावहारिक ढाँचा है जो व्यक्तिगत डेटा की सुरक्षा करते हुए नवाचार और आर्थिक विकास का समर्थन करता है।
- कमियों को दूर करके और लचीलेपन पर ध्यान केंद्रित करके, भारत GDPR जैसे कठोर वैश्विक मॉडल में देखी जाने वाली समस्याओं के बिना प्रभावी डेटा संरक्षण कानून बना सकता है।