

WEEKLY UPDATES – (3rd July – 9th July)

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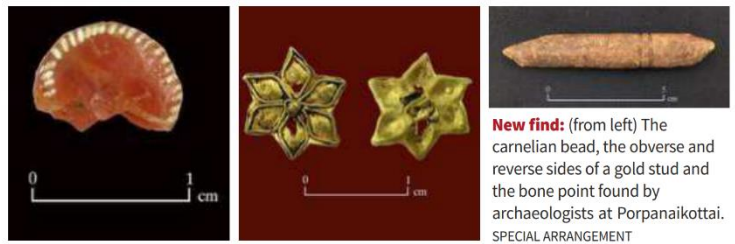
HISTORY

Archaeologists Come Up with Rare Findings in Tamil Nadu

Context: A gold stud, a bone point and a carnelian bead have been unearthed by archaeologists at Porpanaikottai in Pudukottai district of Tamil Nadu, where the State Archaeology Department has taken up excavation this year.

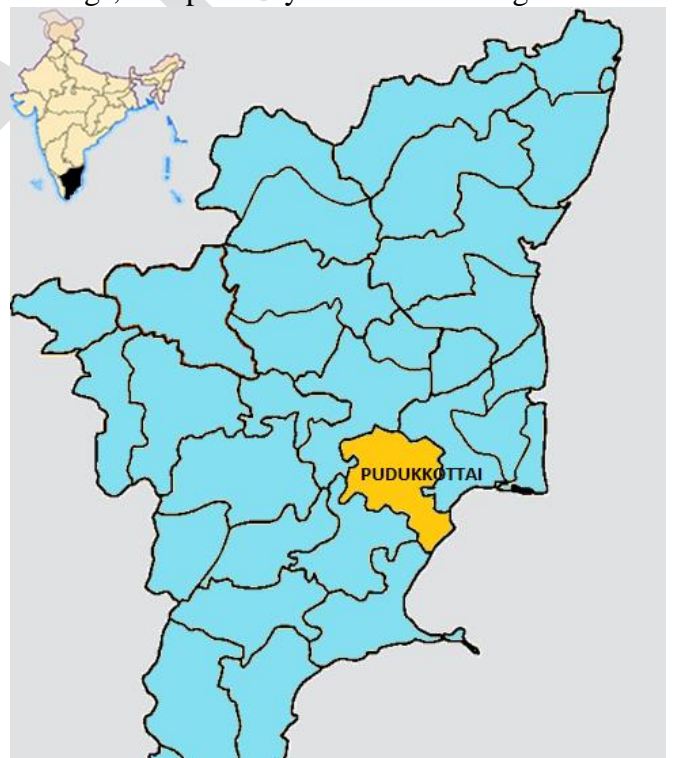
Key Highlights

- A Sangam age fort is believed to have existed at the site.
- The stud in floral design with six petals was found at a depth of 133 cm in one of the eight trenches dug at the site.
- “The ornament, weighing 0.26 grams, probably used as a nose stud and is an indication of the culture of the Sangam Age.
- The bone point and the broken piece of carnelian bead were found at a depth of 140–160 cm in another trench.
- The bone point, with pointed ends on both sides and carvings, was probably used for weaving.
- The discovery of the red round-shaped carnelian bead is a pointer to domestic trade.
- “Carnelian beads have been found at Kodumanal and a few other places in Tamil Nadu. The stones were usually sourced from Gujarat.



Old Findings

- A three course brick structure was unearthed within a few days of digging.
- Over 150 antiques, including potsherds, hopscotches, spouts, pieces of glass bangles and beads, a terracotta lamp, a coin, a spindle whorl and rubbing stone, besides a couple of graffiti, have been found at the site so far.
- Porpanaikottai, situated about 6.5 km to the east of Pudukottai town, is one of the new sites where the department had taken up excavation this year.
- Studies carried out at the site using Light Detection and Ranging (LIDAR), a remote sensing method, had indicated that a fort had existed at Porpanaikottai. A habitation mound spread over 1.26 hectares is believed to have existed within the fort.



ECONOMICS

Rupee Internationalisation

Context: The Government of India presses ahead with its plan to internationalise the Indian Rupee (INR), an Inter-Departmental Group (IDG) of officials of the Reserve Bank of India (RBI) have in a report cautioned that internationalisation may result in increased volatility in the rupee's exchange rate in the initial stages.

Key Highlights

- “This would further have monetary implications as the obligation of a country to supply its currency to meet the global demand may come in conflict with its domestic monetary policies, popularly known as the Triffin dilemma,” the IDG wrote.
- “Also, the internationalisation of a currency may accentuate an external shock, given the open channel of the flow of funds into and out of the country and from one currency to another.
- However, the IDG held that the overall benefits of internationalisation in terms of limited exchange rate risk, lower cost of capital due to better access to international financial markets, high seignior age benefits and reduced requirement of foreign exchange reserves far outweighed the concerns.

Demand to Trade in The Indian Rupee

- Very little international demand The rupee is far from being internationalised — the daily average share for the rupee in the global foreign exchange market hovers around ~1.6%, while India's share of global goods trade is ~2%.
- India has taken some steps to promote the internationalisation of the rupee (e.g., enable external commercial

A volatile proposition

Internationalising the rupee may result in increased exchange rate volatility in the initial stages, the IDG cautioned



- A global rupee may accentuate external shocks as funds can freely flow in and out of India
- Internationalisation can offer benefits such as limited exchange rate risk, lower cost of capital
- However, the RBI said the IDG's observations do not reflect its official position on the issue

Background

- In the 1950s, the Indian rupee was legal tender for almost all transactions in the United Arab Emirates (UAE), Kuwait, Bahrain, Oman and Qatar, with the Gulf monarchies purchasing rupees with the pound sterling.
- In 1959, to mitigate challenges associated with gold smuggling, the Reserve Bank of India (Amendment) Act was brought in, enabling the creation of the “Gulf Rupee”, with notes issued by the central bank for circulation only in the West Asian region.
 - Holders of the Indian currency were given six weeks to exchange their Indian currency, with the transition happening smoothly.
- However, by 1966, India devalued its currency, eventually causing some West Asian countries to replace the Gulf rupee with their own currencies.
- Flagging confidence in the Indian rupee's stability combined with an oil revenue linked boom, slowly led to the introduction of sovereign currencies in the region.
- The move, in 2023, to withdraw the ₹2,000 note has also impacted confidence in the rupee. The demonetisation of 2016 also shook confidence in the Indian rupee, especially in Bhutan and Nepal.
 - Both countries continue to fear additional policy changes by the RBI (including further demonetisation). The rupee's internationalisation cannot make a start without accounting for the concerns expressed by India's neighbours.

borrowings in rupees), with a push to Indian banks to open Rupee Vostro accounts for banks from Russia, the UAE, Sri Lanka and Mauritius and measures to trade with ~18 countries in rupees instituted.

- However, such transactions have been limited, with India still buying oil from Russia in dollars. Ongoing negotiations with Russia to settle trade in rupees have been slow going, with Russia expected to have an annual rupee surplus of over \$40 billion — reports indicate that Russian banks have been averse to the trade, given the risk of further currency depreciation and a lack of awareness among traders about local currency facilities.

In short, there is very little international demand to trade in the Indian rupee. For a currency to be considered a reserve currency, the rupee needs to be fully convertible, readily usable, and available in sufficient quantities.

- India does not permit full capital account convertibility (i.e., allowing free movement of local financial investment assets into foreign assets and vice versa), with significant constraints on the exchange of its currency with others — driven by past fears of capital flight (i.e., outflow of capital from India due to monetary policies/lack of growth) and exchange rate volatility, given significant current and capital account deficits.

Reforms Required

- It must be made more freely convertible, with a goal of full convertibility by 2060 – letting financial investments move freely between India and abroad.
 - This would allow foreign investors to easily buy and sell the rupee, enhancing its liquidity and making it more attractive.
- Additionally, the RBI should pursue a deeper and more liquid rupee bond market, enabling foreign investors and Indian trade partners to have more investment options in rupees, enabling its international use.
- Indian exporters and importers should be encouraged to invoice their transactions in rupee — optimising the trade settlement formalities for rupee import/export transactions would go a long way.
- Additional currency swap agreements (as with Sri Lanka) would further allow India to settle trade and investment transactions in rupees, without resorting to a reserve currency such as the dollar.
- Additionally, tax incentives to foreign businesses to utilise the rupee in operations in India would also help.
- The RBI and the Ministry of Finance must ensure currency management stability (consistent and predictable issuance/retrieval of notes and coins) and improve the exchange rate regime.
- More demonetisation (or devaluation) will impact confidence. A start could be made to push for making the rupee an official currency in international organisations, thereby giving it a higher profile and acceptability.
- The Tarapore Committees' (in 1997 and 2006) recommendations must be pursued including a push to reduce fiscal deficits lower than 3.5%, a reduction in gross inflation rate to 3%-5%, and a reduction in gross banking non-performing assets to less than 5%.

Dark Patterns

Context: The Department of Consumer Affairs and the Advertising Standards Council of India (ASCI) recently held a joint consultation with stakeholders on the menace of ‘dark patterns’. The ASCI has come up with guidelines for the same, with the central government also working towards norms against ‘dark patterns’.

A dark pattern refers to a design or user interface technique that is intentionally crafted to manipulate or deceive users into making certain choices or taking specific actions that may not be in their best interest.

Many believe that the use of dark patterns is a business strategy. The legality of dark patterns is a complex matter as distinguishing between manipulation and fraudulent intent can be challenging.

On June 30, 2023, as per information by the PIB, major Indian online marketplaces received a letter from the Department of Consumer Affairs warning them against engaging in “unfair trade practices” by implementing “dark patterns” in their user interfaces to influence consumer choice.

What Are the Different Types?

Businesses are using various techniques and deceptive patterns to downgrade the user experience to their own advantage. Some of the common practices are

- Creating a sense of urgency or scarcity while online shopping;
- Confirm shaming wherein a consumer is criticised for not conforming to a particular belief;
- The forced action of signing up for a service to access content;
- Advertising one product or service but delivering another, often of lower quality, known as the bait and switch technique;
- Hidden costs where the bill is revised or costs are added when the consumer is almost certain to purchase the product;
- Disguised advertisements of a particular product by way of depicting it as news and many more.

What Are Dark Patterns?

Harry Brignull, a user experience researcher in the U.K., introduced the phrase ‘dark pattern’ in 2010 to characterise deceptive strategies used to trick clients.

- A dark pattern refers to a design or user interface technique that is intentionally crafted to manipulate or deceive users into making certain choices or taking specific actions that may not be in their best interest.
- It is a deceptive practice employed to influence user behaviour in a way that benefits the company implementing it.

Such deceptive patterns that manipulate consumer choice and impede their right to be well-informed constitute unfair practices that are prohibited under the Consumer Protection Act 2019.

Are Dark Patterns Illegal?

Many believe that the use of dark patterns is a business strategy. The legality of dark patterns is a complex matter as distinguishing between manipulation and fraudulent intent can be challenging.

- As of now, there are no specific regulations in place in most nations against dark patterns. Nonetheless, individuals who have experienced harm as a result of dark patterns may potentially seek compensation for damages.
- In 2022, Google and Facebook faced repercussions due to their cookie banners.
 - These companies violated EU and French regulations by making it more difficult for users to reject cookies as compared to accepting them.

How Do We Address Dark Patterns in India?

The Department of Consumer Affairs and the ASCI have identified the issue and recently taken certain steps to handle the same.

- As of now, companies are being asked to desist from using such tactics in the e-market and on June 30, 2023, as per information by the PIB, major Indian online marketplaces received a letter from the Department of Consumer Affairs warning them against engaging in “unfair trade practices” by implementing “dark patterns” in their user interfaces to influence consumer choice and infringe on “consumer rights” as stated in Section 2(9) of the Consumer Protection Act, 2019.
- However, with the growing use of e-platforms, a robust legal mechanism is a demand.
- The Indian government should also amend existing laws to specifically address dark patterns.
 - To do this, new rules aimed against deceptive design practices may need to be introduced along with updated consumer protection laws and data protection legislation.

What Are Global Regulators Saying?

Major international authorities are acting and formulating rules to address the issue.

- In a letter to U.K. businesses, the Competition and Markets Authority (CMA) of the U.K. lists different pressure selling techniques that the CMA believes would likely violate consumer protection laws and for which actions will be taken.
- Guidelines from the European Data Protection Board were released in 2022 and offered designers and users of social media platforms practical guidance on how to spot and avoid so called “dark patterns” in social media interfaces that are in violation of General Data Protection Regulation (GDPR) laws.

GOVERNANCE

Disability & NFHS-6

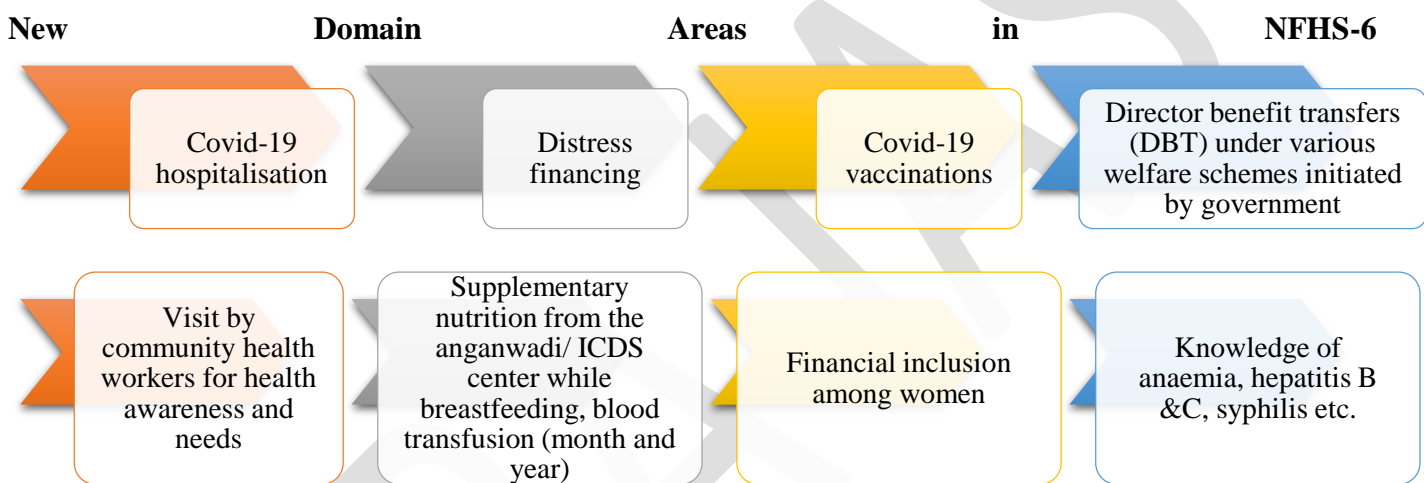
Context: Union government to drop the disability specific question from the National Family Health Survey (NFHS)-6.

Key Highlights

- After years of campaigning for the same, activists rejoiced when the government added one question on disability in the NFHS-5, and were hopeful that this would be built upon in subsequent versions of the nationwide survey.
- The Ministry of Health and Family responded that questions about disability were already asked as part of the Sample Registration Survey (SRS) 76th round, conducted between July and December

2018, and that any specific information can be tabulated from the raw data, which is also available in the public domain.

- It has also gone on record stating that disability data will ‘not change fast’.
- The SRS does a good job with marking the prevalence and incidence of disability, education level, living arrangements, care-givers, certificate of disability, accessibility and unemployment rate, among others.
- The NFHS asks more comprehensive questions. It seeks answers on health and nutrition status, access to health schemes, insurance, sexual behaviour, availability of family planning, use of contraception, domestic violence, household amenities and possessions, lifestyle indicators, and access to drinking water and toilets.



- Unlike in previous rounds, NFHS-6 will adopt Urban Frame Survey (UFS, 2012-17) of National Statistical Office (NSO), Ministry of Statistics and Programme Implementation (MoSPI) as a sampling frame for urban area.
- This strategy will minimize the non-sampling errors to large extent as the boundary identification problems using 2011 census frame will be resolved.
- While for rural areas, updated list of villages from NSO will be used as a frame, which would be matched with the Principal Component Analysis (PCA) from the Census to get auxiliary information.”

The government will also evaluate the areas such as

- Migration
- Utilization of health services i.e. Health and wellness centre
- Health insurance/ health financing
- Digital literacy
- Counselling on family planning after abortion
- Incentives under new methods of family planning
- Quality of family planning programme
- Menstrual hygiene
- Marital choice

Centre Announces Scheme to Support Minor Rape Victims

Context: Recognising the trauma faced by minor rape victims, the Union government has decided to provide medical, financial and infrastructure support to victims in cases where the sexual assault results in pregnancies.

Key Highlights

- The special scheme, announced by the Women and Child Development Ministry (WCD), would operate under the aegis of the Nirbhaya Fund and an amount of ₹74.1 crore has been allocated.
- Govt. have additionally leveraged the administrative structure of Mission Vatsalya in collaboration with State governments and Child Care institutions [CCIs] to actualise this support to minor victims.
 - Mission Vatsalya, launched in 2021, is focused on the protection and welfare of children.
- **Fast Track Courts:** The government had already accelerated access to justice for minor victims of rape by establishing 415 POCSO fast track courts in the country.
- This **scheme aims to provide** integrated support to girl child victims under one roof, facilitate immediate, emergency and nonemergency access to a range of services.
- The **scheme aims to provide** access to education, police assistance, healthcare, psychological support, and legal aid.
- It **also provides** insurance coverage for the victim and her new-born and does not require the victim to have a copy of the First Information Report (FIR) to avail of the benefits.
- The new scheme would be available for girls up to the age of 18 years at the level of childcare institutions and for women up to 23 years at aftercare facilities.

In 2021, the National Crime Records Bureau reported 51,863 cases under the Protection of Children from Sexual Offences (POCSO) Act. Out of these, 64% cases were reported under Section 3 and 5 (penetrative sexual assault and aggravated penetrative sexual assault, respectively).

NIRBHAYA SCHEME

About	In a bid to counter abuses against women and girls, Nirbhaya Fund was announced in 2013 Union Budget.
Fund	The fund was started with a corpus of Rs 1,000 crore. <ul style="list-style-type: none"> • The Government of India established the Nirbhaya Fund in response to the Nirbhaya Case in 2013. • It is aimed specifically at projects for improving women's safety and security.
Administration	The Fund is administered by Department of Economic Affairs (DEA) of the Finance Ministry.
Nodal Agency	The Ministry of Women and Child Development is the nodal agency for Nirbhaya Fund, though schemes are implemented by several Union ministries, state governments and other agencies, including non-government outfits.

SCHEMES UNDER NIRBHAYA FUND

Ministry of Women and Child Development

One Stop Centre	These are popularly known as Sakhi Centres. The scheme began to function across India from April 2015. The scheme aims to establish centres to facilitate women who are victims of violence. The Centres provide first aid, medical aid, police assistance, legal aid and counselling support. About 186 centres will be made operational by July, 2017.
Universalisation of Women Helpline	The Department of Telecommunication has allocated the number 181 for women helpline. As of now, Women Helplines are already operational in 18 States/UTs. These helpline numbers will link the One Stop Centres being established under the Nirbhaya Fund.
Mahila Police Volunteer scheme	Mahila Police Volunteers (MPVs) is envisaged to act as a link between police and community and help women in distress. Haryana has become the first state to start this scheme in December, 2016. Other States are expected to follow suit.
Schemes Of Ministry of Home Affairs	
Emergency Response support System	Emergency Response Support System (ERSS) envisages an integrated computer aided emergency response platform that aims to ensure speedy assistance to the distressed persons.
Central Victim Compensation Fund	Central Victim Compensation Scheme (CVCF) has been framed under section 357A of CrPC. Under this initiative a Corpus Fund will be disbursed to States/UT to facilitate States/UTs in providing compensation to the victim (including survivors of rape and acid attack) or her dependents who have suffered loss or injury as a result of the crime.
Schemes of Ministry of Railways	
Integrated Emergency Response Management System	This will provide round the clock security to women passengers in 983 Railway Stations across the country by strengthening of security arrangements of Railways with Security Helpline, Medical Facilities, RPF and police, installation of CCTV cameras, etc.
Abhaya Project Proposal (Andhra Pradesh)	Abhaya Project is a proposal proposed by Andhra Pradesh for ensuring the safety of Women and Girl child during the transport (auto rickshaw).
CHIRALI-Friends Forever (Rajasthan)	Under this scheme, Community Action Groups in 7 districts of Rajasthan has been constituted for a period of three years from 2016-17 to 2018-19 to create an enabling environment to support girls and women to move freely and make use of opportunities for their overall well-being.

Green Tribunal Orders SOP to Curb Pollution At Hospitals

Context: The National Green Tribunal (NGT) has constituted a five-member committee, headed by the Secretary of the Union Ministry of Health, to form a standard operating procedure (SOP) for environmental management inside and around all government district hospitals and hospitals larger than such district hospitals, including medical colleges, within three months.

- “The committee may specify issues to be covered within the complex and outside the boundary of the healthcare facility for regulation and control of polluting activities which may be found necessary to offset adverse impact on environment.
- The green panel also ordered measures such as multilevel parking, management of traffic and controlling air pollution to be taken specifically for All India Institute of Medical Sciences, Delhi.

National Green Tribunal	
Establishment	Established under the National Green Tribunal Act 2010
Aim	Established for effective and expeditious disposal of cases relating to environmental protection and conservation of forests and other natural resources.
Composition of NGT	<p>NGT comprises the Chairperson, the Judicial Members, and Expert Members.</p> <ul style="list-style-type: none"> • They shall hold office for a term of 5 years and are not eligible for reappointment. • The Chairperson is appointed by the Central Government in consultation with the Chief Justice of India (CJI). • A Selection Committee shall be formed by the central government to appoint the Judicial Members and Expert Members. • There are to be at least 10 and a maximum of 20 full-time Judicial members and Expert Members in the tribunal.
Powers of NGT	<ul style="list-style-type: none"> • It has appellate jurisdiction to hear appeals as a Court. • The Tribunal is not bound by the procedure laid down under the Code of Civil Procedure, 1908, but shall be guided by principles of natural justice. • NGT is mandated to make disposal of applications or appeals finally within 6 months of the filing of the same. • An order/decision/award of Tribunal is executable as a decree of a civil court.
Head office	New Delhi is the Principal Place of Sitting of the Tribunal and Bhopal, Pune, Kolkata and Chennai shall be the other four places of sitting of the Tribunal.

Govt. To Help Combat Child Trafficking in Border Areas, Set Up Rehabilitation Homes

Context: The Centre has decided to help build infrastructure in border areas to combat child trafficking and help in rehabilitation and protection of victims.

Key Highlights

- As part of this initiative, the Women and Child Development Ministry will provide financial assistance to the States and Union Territories (U.T.) along the border areas to set up homes for the protection and rehabilitation of trafficking victims from neighbouring countries.

- These homes would provide shelter, food, clothing, counselling, primary health facilities and other daily needs for the trafficking victims, most of whom are children and minors.
- The trafficking victims in the border areas will also be produced before the child welfare committees to declare them fit for availing sponsorship as per the Mission Vatsalya Scheme guidelines and accordingly, the States and U.T.s will be requested to do the needful.

Previous Status

- Till now, the Women and Child Development Ministry has been providing financial assistance to all States and Union Territories under **the Nirbhaya Fund** to set up and strengthen Anti-Human Trafficking Units (AHTU) in every district of the country.
- Funding has also been provided for setting up these units in border guarding forces such as the Border Security Force (BSF) and Sashastra Seema Bal (SSB).
- As of now, 788 AHTUs are functional.

Need for the scheme

- According to the NCRB data, there were 6,533 victims of human trafficking in the 2,189 cases filed last year under anti-human trafficking units. Out of these, 4,062 victims were female and 2,471 were male.
- As many as 2,877 victims were minors. While more underage boys (1,570) were trafficked in 2021 than girls (1,307) in 2021, this trend reversed in the case of adult victims.

Open Market Sale Scheme (OMSS)

Context: The National Conference of Food Ministers failed to resolve the issue of the discontinuance of rice and wheat sales to States under the Open Market Sale Scheme (OMSS) in view of the Centre's restrictions.

Open Market Sale Scheme (OMSS)

- FCI sells surplus stocks of wheat and rice at predetermined prices through e-auction in the open market from time to time to enhance the supply of food grains.
- The purpose of OMSS is to dispose of surplus stocks of wheat and rice held by FCI, and to regulate the prices of wheat in the open market.

India & Human Trafficking

- According to the officials, India is a source as well as a destination country for human trafficking.
 - The main source countries are Nepal, Bangladesh and Myanmar from where women and girls are trafficked in the lure of a better life, jobs and good living conditions on this side.
- A majority of those trafficked are minor girls or young women who after their arrival in India are sold and forced into commercial sex work.
- These women often reach major cities such as Mumbai, Delhi and Hyderabad from where they are taken out of the country mainly to West Asia and South East Asia, the officials said.

Thus, the States bordering these countries need to be more vigilant and have adequate facilities to provide relief and rehabilitation, and in order to aid this, the Ministry would provide the financial assistance.

- FCI conducts weekly auctions for the OMSS for wheat on the platform of the National Commodity and Derivatives Exchange Limited (NCDEX).
- NCDEX is a commodity exchange platform in India that provides a platform for trading in various agricultural and other commodities.
- The State Governments/ Union Territory Administrations are also allowed to participate in the e-auction, if they require wheat and rice outside the Targeted Public Distribution Scheme (TPDS) and Other Welfare Schemes (OWS).
- The reserve price is fixed by the government. In the tenders floated by the FCI, the bidders cannot quote less than the reserve price.
- The present form of OMSS comprises 3 schemes as under:
 - Sale of wheat to bulk consumers/private traders through e-auction.
 - Sale of wheat to bulk consumers/private traders through e-auction by dedicated movement.
 - Sale of Raw Rice Grade 'A' to bulk consumers/private traders through e-auction.

Food Corporation of India (FCI)

- It is a statutory body set up in 1965 (under the Food Corporation Act, 1964) against the backdrop of major shortage of grains, especially wheat, in the country.
- It comes under the ownership of the Ministry of Consumer Affairs, Food and Public Distribution, Government of India.
- It was established with the objective of ensuring adequate availability of food grains throughout the country, and to maintain price stability in the market.
- The FCI also maintains buffer stocks of food grains to ensure food security during times of scarcity or crisis.
- The FCI is also responsible for distributing foodgrains throughout the country for public distribution system.
- FCI also conducts e-auction as one of the methods to dispose of its surplus food grains.

Issue related to the OMSS

OMSS	Under the OMSS, the FCI sells (from time to time) surplus food grains (especially wheat and rice) from the central pool in the open market to traders, bulk consumers, and retail chains, at pre-determined prices.
How?	Through e-auctions, where open-market bidders can buy specified quantities.
OMSS and States	States are also allowed to procure food grains (over and above what they get from the central pool to distribute to NFSA beneficiaries) through the OMSS without participating in the auctions.
Objective of OMSS	Ensure food security by enhancing the supply of food grains during the lean season, control inflation by moderating the open market prices, especially in the deficit regions
Revision of OMSS	The Centre decided to restrict the quantity that a single bidder can purchase from 3,000 metric tonnes (MT) to 10-100 MT.

The objective behind the revision	To accommodate more small and marginal buyers, curb retail prices as allowing smaller bids should ideally break monopolies of bulk buyers, allowing more competitive bids by small buyers.
Impact of Revision on States	The Centre stopped the sale of rice and wheat from the Central pool under the OMSS to State governments, also disallowing private bidders to sell their OMSS supplies to state governments.
Steps Taken by States	Considering alternative methods of obtaining wheat and rice. For example, TN is trying to purchase rice from government agencies other than FCI.
Allegations of States	States such as Karnataka (which runs the Anna Bhagya scheme) and Tamil Nadu (which runs the universal PDS) have criticised the government for engaging in “politics” at the expense of marginalised beneficiaries of State welfare schemes.
Centre’s reply	Restrictions are imposed to curb inflation and regulate supply. The Centre is already distributing grains to 80 crore marginalised beneficiaries under the NFSA.

SCIENCE & TECHNOLOGY

Genome-Sequencing

Context: New born screening programmes are now in vogue in different countries, and have been deployed in India as well. They are based on the fact that an early diagnosis could allow use of effective treatments and save an infant from death or disability; in the U.S., healthcare workers screen for around 30 diseases, including treatable ones.

Key Highlights

- There are 6,000 or so genetic diseases, of which around 3,500 diseases have been documented, and a much smaller number have had their molecular and/or genetic defects mapped.
- For example, in the U.S., healthcare workers screen for around 30 diseases, including treatable ones of the blood, the endocrine system, and metabolism. Then again, in many cases, they lose the window of opportunity because standard new-born-screening programmes are limited on the menu of genetic tests they cover.
- Genomic sequencing is now available, accessible, and in many ways more affordable. It also offers a much better coverage of genetic diseases to screen for.
 - Importantly, this could help healthcare workers make a fast and effective diagnosis, helped by the fact that sequencing is also a ‘single’ test, versus the multitude of tests performed as part of routine new born screening.

Why Is It Important?

- The rarity of many genetic diseases, the narrow window of opportunity, the long diagnostic paths, and the unfortunate deaths of ill babies makes it very difficult to document and understand these diseases.
- However, population scale genome-sequencing efforts have provided insights into the prevalence of many of these diseases in an unbiased manner.
- Discoveries in the past three decades have also allowed a small but significant number of diseases to be treated or managed effectively.
- This in turn opened up a newer opportunity: to diagnose and treat genetic diseases through genomic sequencing in new born babies, especially sick ones.
- Researchers at the Rady Children’s Institute, led by Stephen Kingsmore, earlier showed that whole-genome sequencing could provide a much higher number of positive cases with a diagnosis, around 40% (compared with standard genetic tests at 10%), with 26% of the diagnosed children benefiting from reduced severity of illness due to the rapid diagnosis and, consequently, a significant reduction in the cost of treatments.

Smart Bandage

Context: In March 2023, a study published in Science Advances offered to help accelerate healing of chronic wounds using a wearable, wireless, flexible ‘smart bandage’ as big as a finger. This device can deliver drugs while monitoring healing status and transmitting to a smartphone.

Key Highlight

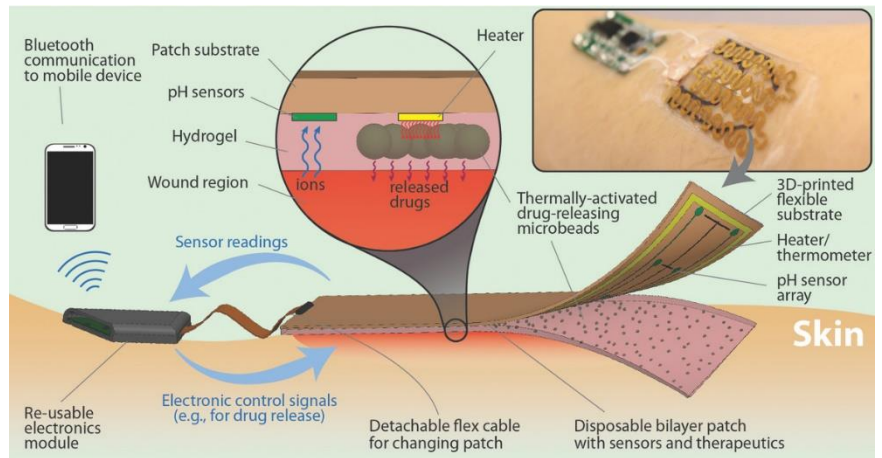
Sometimes, complications from conditions like diabetes, insufficient blood supply, nerve damage, and immune system dysfunction can impair wound healing, resulting in chronic wounds. And irrespective of the underlying cause, all chronic wounds exhibit a disordered healing process and an inability to heal within the expected duration.

- In March 2023, a study was published in Science Advances that offered to help accelerate healing in such cases – using a wearable, wireless, mechanically flexible “smart bandage” as big as a finger.
- This device, according to researchers, can deliver drugs while monitoring the healing status and transmitting data to a smartphone.

What is a smart bandage?

- Chronic non healing wounds affect tens of millions of people around the world and cause a staggering financial burden on the health care system.
- Personalised wound management demands both effective wound therapy and close monitoring of crucial wound healing biomarkers in the wound exudate.
- The device, is assembled on a soft, stretchable polymer that helps the bandage maintain contact with and stick to the skin.
- The bio-electronic system consists of biosensors that monitor biomarkers in the wound exudate.
- Data collected by the bandage is passed to a flexible printed circuit board, which relays it wirelessly to a smartphone or tablet for review by a physician.

- A pair of electrodes control drug release from a hydrogel layer as well as stimulate the wound to encourage tissue regrowth.
- While scientists have previously used biosensors to track wound-healing, they have monitored a single feature of the wound bed. The new setup, in contrast, can monitor multiple features, building the sort of picture required to fully understand the wound status. In the past, the exudates have limited the biosensors' sensitivity. In the new design, the researchers enclosed the sensors in a porous membrane, protecting their parts and increasing their operational stability.
- Biosensors determine the wound status by tracking the chemical composition of the exudates, which changes as the wound heals.
- Additional sensors monitor the pH and temperature for real time information about the infection and inflammation.
- A pair of electrodes – the same electrodes that stimulate the tissue – control the release of drugs from a hydrogel layer.
- The wireless nature of the device sidesteps the problems of existing electrical stimulation devices, which usually require bulky equipment and wired connections, limiting their clinical use.



INTERNATIONAL RELATIONS

India – China & Pangong Tso Lake

Context: India is building a black topped road on the north bank and China is building a bridge across glacial lake; both await 19th round of Corps Commander level talks to find a resolution to dispute.

Key Highlights

- Three years after the violent clash between Indian and Chinese forces in Galwan followed by tanks facing each other around the Pangong Tso — a lake spanning eastern Ladakh and western Tibet — there is hectic activity in the area from both sides.
- While China is rushing to complete a bridge across the Pangong Tso, connecting the north and south banks, India is also building



a blacktopped road on its side on the north bank.

- These are among a number of infrastructure projects initiated on both sides since the stand-off, permanently altering the status quo on the ground in eastern Ladakh, even as the two sides await the 19th round of Corps Commander level talks to find a resolution to their dispute in the region.
- “Construction of blacktopped road towards Finger 4 on our side is on and is expected to be completed by 2025.
- Chinese construction On the Chinese side, the source said that work is now under way on the main bridge, while the secondary bridge has been completed. Recently, largescale construction activity was observed on the north bank. Apart from the bridge, work on road connectivity along the south bank towards Shandong village is also under progress, another official source said, citing intelligence inputs.
 - A Chinese air defence site is located east of the Khurnak fort.
 - A 22 km tunnel is under construction along the G-0177 expressway at Yuli, connecting to the very important G 216 highway in Tibet.



Pangong Lake and Border Disputes

- India holds one-third of the 135 km-long Pangong Lake, with the disputed area known as the "fingers".
- Indian claims extend till Finger 8, the perceived Line of Actual Control (LAC), while historically holding territory till Finger 4.
- Initial clashes in May 2020 occurred on the north bank, which has more significant differences in LAC perceptions compared to the south bank.
- Indian Army has a permanent position near Finger 3, while the Chinese have a base east of Finger 8.



NATO & NATO Plus

Context & Background: It was during a virtual press briefing in March 2023 on the North Atlantic Treaty Organization's (NATO) focus on South Asia and the Indo-Pacific region that the United States Permanent Representative to NATO, Julianne Smith, was quoted as saying that “the NATO alliance is open to more engagement, should India seek that”.

- Reflecting the same sentiment, the U.S. House Select Committee on the Strategic Competition between the United States and the Chinese Communist Party (CCP), in May 2023, recommended strengthening the ‘NATO Plus’ framework by including India in the grouping.
- India’s External Affairs Minister S. Jaishankar had rejected this idea by saying that “NATO template does not apply to India”.
- Yet on the eve of Prime Minister Narendra Modi’s visit to the U.S., in June, Senate India Caucus Co-Chair Mark Warner shared his plans to table a bill to bring India into the NATO Plus fold.

NATO & NATO Plus

- ✓ NATO is a transatlantic military alliance of 31 countries, with the majority of members from Europe.
 - After the dissolution of the Soviet Union and the end of the Cold War, many thought that NATO would lose its relevance.
 - On the contrary, NATO has not only survived but also expanded, with Finland joining as its 31st member (April 2023), and Sweden waiting in the wings.
 - NATO appears to be getting the much-needed ground for survival, thanks to Russia’s tirade against it and the invasion of Ukraine. With NATO swelling its expanse, some analysts even see the onset of Cold War 2.0.
- ✓ NATO plus refers to a security arrangement of NATO and the five treaty allies of the U.S. — Australia, New Zealand, Japan, Israel, and South Korea as members — to enhance “global defence cooperation” and win the “strategic competition with the Chinese Communist Party”.
 - Interestingly, the term ‘NATO Plus’ is not an officially recognised or established concept within NATO itself, but has been used in discussions and debates regarding the potential expansion of the alliance.
 - The inclusion of these countries as members would require a complex process of negotiation and assessment of their compatibility with NATO’s principles, obligations, and defence commitments.
- ✓ While NATO’s earlier target was the Soviet Union and now Russia, the focus of NATO Plus is clearly on containing China.
 - Therefore, considering its disputes with China, India remains a missing link in the framework.

India & NATO

- ✓ In light of increasing regional security challenges, India joining the NATO Plus framework could provide it with a security umbrella, with protection and deterrence against potential threats.

- ✓ India could also gain access to advanced military technologies, intelligence-sharing platforms, and inter-operability with other member states.
- ✓ This could potentially strengthen India's defence capabilities and modernisation efforts.
- ✓ But this bait needs to be assessed in the larger context of India's strategic autonomy.
 - First, getting into any NATO framework will annoy Russia and China.
 - Apart from the robust strategic partnership, Russia has been useful to India in dealing with regional security challenges and, importantly, moderating the stance of China.
 - Even though Russia is getting over-dependent on China, post the war in Ukraine, Moscow remains a valuable partner for India.
 - Second, while aligning with a U.S. led alliance system may be tempting due to the threats posed by China, it could ultimately prove counterproductive and detrimental.
 - Having a military framework will limit India's freedom of action and prevent it from pursuing an independent policy towards China.
 - Moreover, at a time when India has its own bilateral issues with China and a strategy for the Indo-Pacific, hopping into the Taiwan strategy of the U.S. under NATO Plus will complicate India's security, with the possibility of Chinese justification for further military buildup along the India-China border and frequent intrusion.
 - Third, India has traditionally maintained a policy of strategic autonomy, allowing it to engage with various nations and blocs based on its own interests.
 - Joining a NATO framework would require India to align its defence and security policies with the objectives and strategies of the alliance, thereby potentially undermining India's autonomy.
 - While the non-aligned policy will get a quick death, it could strain relationships with countries, especially neighbours and regional organisations that value India's independent stance, and could also limit its flexibility in engaging with other regional powers.

India's Priorities

- India's priorities lie in addressing its own regional dynamics that includes a unique set of security challenges such as border disputes, terrorism, and regional conflicts.
- While NATO has certain competencies to deal with such issues, its larger geopolitical agenda starting from Eurasia to the Indo-Pacific may divert resources and attention away from these pressing issues and, therefore, will not be of much help to India.
- For the time being, India's posturing through the Quad (India, Japan, Australia and the U.S.; the Asian NATO as per China) looks more promising than the NATO Plus bait, though China remains an elephant in the room during its summits.

India-Australia Antisubmarine Warfare Exercise

Context: The Australian Air Force's long range maritime patrol aircraft P-8A landed at INS Rajali Naval air station in Tamil Nadu for an anti-submarine warfare exercise with the Indian Navy's P-8I aircraft from June 30 to July 6.

- Maritime and subsurface domain awareness, apart from anti-submarine warfare, has been the major focus areas for the Quad group of countries comprising India, Australia, Japan and the U.S.

P-8I Aircraft

- Long-range Maritime Reconnaissance and Anti-Submarine Warfare Aircraft.
- Indian variant of the P-8A Poseidon aircraft that Boeing company developed as a replacement for the US Navy's ageing P-3 fleet.
- Maximum speed: 907 kmph
- Operating range: over 1,200 nautical miles
- P-8Is detect threats and neutralize them if required, far before they come anywhere near Indian shores.
- The Indian Navy became the first international customer for the P-8 aircraft in 2009.
- The Navy had procured eight P-8Is in 2009. The aircraft are part of the 312A Naval Air Squadron based at Arakkonam in Tamil Nadu.
- In 2016, the Navy exercised the optional clause for four more P-8Is.
- Further in May 2021, the US State Department approved the possible sale of six additional P-8I aircraft and related equipment, to India.
- The six P-8Is will come installed with encrypted communication systems since India has now signed the foundational agreement Communications Compatibility and Security Agreement (COMCASA) with the US.

HEALTH

The Irrevocable Connection Between Anaemia and Maternal Health

Context: A study conducted on anaemic pregnant women of low and middle-income countries has found that there is a strong link between anaemia and postpartum haemorrhage, with the risk of death or near miss very high.

- Of late anaemia has been in the news in India, what with the government proposing to remove a question on it from the National Family Health Survey (NFHS) and instead do a more elaborate test to determine haemoglobin levels in the blood as part of the Diet and Biomarker (DAB) survey.

Anaemia and Pregnancy

- Anaemia has a very strong link with postpartum haemorrhage (excessive vaginal bleeding after delivery), and the risk of death or near miss is very high.
- As per the study, by the WOMAN (World Maternal Antifibrinolytic) 2 trial collaborators, worldwide, more than half a billion women of reproductive age are anaemic.
- Each year, about 70,000 women who give birth die from postpartum haemorrhage, almost all of them in low and middle income countries.

About the recent study

- In this study conducted in Pakistan, Nigeria, Tanzania, and Zambia, researchers recruited over 10,000 women who had moderate or severe anaemia and gave birth vaginally in hospitals.

- These countries were chosen due to the high prevalence of anaemia in pregnancy, which had been established by previous trials.
- The objective of the study was to investigate the relationship between pre-birth haemoglobin levels and the risk of postpartum haemorrhage in a large cohort of women from low- and middle-income countries.
- The researchers chose to analyze anaemia as a continuous variable because they believed that demonstrating a consistent biological gradient would provide stronger evidence of a causal relationship.
- The primary outcome measured was the occurrence of postpartum haemorrhage, which was defined in three ways:
 - "clinical postpartum haemorrhage" (estimated blood loss of ≥ 500 mL or any amount of blood loss that compromised the woman's hemodynamic stability),
 - "WHO-defined postpartum haemorrhage" (estimated blood loss of at least 500 mL), and
 - "calculated postpartum haemorrhage" (blood loss of $\geq 1,000$ mL)

Blood loss and Shock

- There was clear evidence from the study that lower haemoglobin values had a direct relationship with volume blood loss, and clinical postpartum haemorrhage. "We found that with decreasing maternal haemoglobin concentration, the risk of postpartum haemorrhage increases monotonically,".

Anaemia

- Anaemia is a condition in which the number of red blood cells or their oxygen-carrying capacity is insufficient to meet physiological needs, which vary depending on age, sex, altitude, smoking status, and pregnancy status.
- The most common cause of anaemia is iron deficiency, however other conditions such as folate, vitamin B12, and vitamin-A deficiencies, chronic inflammation, parasitic infections, and inherited disorders can also cause anaemia.
- It is associated with fatigue, weakness, dizziness, and drowsiness in its severe form. Women who are pregnant and children are particularly vulnerable.
- Pregnant women and children are particularly vulnerable.
- According to the National Family Health Survey 2019-20, Indian women and children are overwhelmingly anaemic.
- According to the World Health Organization (WHO), women in the reproductive age group and having haemoglobin levels lower than 12 g/dL, as well as children under five with haemoglobin levels lower than 11.0 g/dL are considered anaemic.

Postpartum Haemorrhage

- Postpartum hemorrhage (PPH) is a significant and potentially life-threatening complication that can occur after childbirth.
- It refers to excessive bleeding from the birth canal (vagina), uterus, or other parts of the reproductive system within the first 24 hours after delivery.
- PPH is a leading cause of maternal mortality worldwide, particularly in developing countries where access to healthcare may be limited.

- Anaemia reportedly reduces the oxygen-carrying capacity of blood, and therefore, women with anaemia cannot tolerate the same volume of bleeding as healthy women, and become shocked after a smaller volume blood loss.
- The risk of clinical postpartum haemorrhage was 6.2% in women with moderate anaemia and higher, 11.2% in women with severe anaemia.
- Severe anaemia was associated with seven times higher odds of death or near miss than was moderate anaemia.

Preventing Anaemia: Government Initiatives

The Indian government has a well-structured project to provide weekly iron and folic acid supplements to adolescent girls (and boys), in order to tackle the looming crisis of anaemia.

Anaemia Mukht Bharat (AMB): It is a program launched in 2018 as part of the Intensified National Iron Plus Initiative (NIPI) Program. Its aim is to accelerate the decline of anaemia by increasing the annual rate of decline from one to three percentage points.

- The target groups for AMB include children aged 6-59 months, 5-9 years, adolescent girls and boys aged 10-19 years, women of reproductive age (15-49 years), pregnant women, and lactating mothers.

Weekly Iron and Folic Acid Supplementation (WIFS) program: It addresses the high prevalence and incidence of anaemia among adolescent girls and boys. It involves the supervised weekly ingestion of iron folic acid tablets to combat anaemia.

The operationalization of **blood banks in district hospitals and blood storage units in sub district facilities** is another government initiative to tackle complications arising from severe anaemia. This initiative aims to ensure timely access to blood transfusions and related services.

Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA): It is a government initiative that focuses on conducting special antenatal check-ups on the 9th of every month. Medical officers and obstetricians/gynecologists are involved in this program to detect and treat cases of anaemia among pregnant women.

Understanding Leptospirosis

Context: Leptospirosis has emerged as an important infectious disease in the world today. It is a potentially fatal zoonotic bacterial disease that tends to have large outbreaks after heavy rain or flooding.

- The disease is more prevalent in warm, humid countries and in both urban and rural areas.
- It affects an estimated 1.03 million people every year, killing around 60,000.
- The burden of leptospirosis is expected to increase in the future as the urban poor population in many tropical countries increases even as sanitary infrastructure falls short.

Key Highlights

- The disease has been called “ili jwara” in Kannada and “eli pani” in Malayalam, both meaning “rat fever”.
 - This usage has fed a common belief that rats are the sole cause of the disease, which is not true.
 - Leptospirosis has a spectrum of reservoir hosts, including pigs, cattle, water buffaloes, goats, dogs, horses and sheep

- In India, thousands of people are affected by leptospirosis every year. However, the numbers at the global and regional levels are not exact because of misdiagnosis (its symptoms mimic those of dengue, malaria, and hepatitis), limited access to reliable diagnostics, lack of awareness among treating physicians, and lack of environmental surveillance.
 - Within India, studies have found that leptospirosis is more common in the south, although this could be due to the region's better healthcare and thus better disease detection.

Causes of Leptospirosis

- The disease is caused by a bacterium called *Leptospira interrogans*, or leptospira.
- It is a contagious disease in animals but is occasionally transmitted to humans in certain environmental conditions.
- The carriers of the disease can be either wild or domestic animals, including rodents, cattle, pigs, and dogs.
- The cycle of disease transmission begins with the shedding of leptospira, usually in the urine of infected animals.
- According to the U.S. Centers for Disease Control and Prevention, infected animals can continue to excrete the bacteria into their surroundings for a few months, but sometimes up to several years.

Symptoms

- The severity of a leptospirosis infection ranges from a mild flu-like illness to being life threatening.
- The infection can affect many organs, reflecting the systemic nature of the disease.
- In **milder cases**, patients could experience a sudden onset of fever, chills, and headache – or no symptoms at all.
- In severe cases, the disease can be characterised by the dysfunction of multiple organs, including the liver, kidneys, lungs, and the brain.
- Animals exhibit a variety of clinical symptoms and indications: In cattle and pigs, the disease can potentially cause reproductive failure, stillbirths, and weak calves or piglets. Dogs experience a range of symptoms, including fever, jaundice, vomiting, diarrhoea, renal failure, and even death.

Who are at risk?

- Humans become part of the cycle when they come in direct contact with this urine or indirectly, through soil and water that contain leptospira bacteria.
- A person is more likely to contract leptospirosis if they have cuts or abrasions on their skin.
- The disease is also considered an occupational hazard for people working in agricultural settings, with animals, or in sanitary services that bring them into contact with contaminated water.
- Recreational activities in contaminated lakes and rivers are also reported to increase the risk of leptospirosis.

What are the misconceptions?

- Preventing leptospirosis requires appropriate and adequate health education, community health empowerment, and preventive habits.

- The disease has been called “ili jwara” in Kannada and “eli pani” in Malayalam, both meaning “rat fever”. This usage has fed the common belief that rats are the sole cause of the disease, which is not true.
- Leptospirosis has a spectrum of reservoir hosts, including pigs, cattle, water buffaloes, goats, dogs, horses, and sheep.
- Further, seasonal patterns such as the onset of the monsoon can also potentially facilitate the disease’s incidence and transmission.
- Ambient air that is more humid can help the pathogenic leptospira survive longer in the environment, thus increasing the risk of disease exposure in the community.
- The incidence of the disease is also linked to extreme weather events like floods and hurricanes, when people are exposed to contaminated water.
- Similarly, poor waste management, a high density of stray animals, faulty drainage systems, and unhygienic sanitation facilities are major drivers of the disease in urban areas.
- In rural parts, these are contaminated paddy fields, dirty livestock shelters, and poor water quality and sanitation.

Despite this complexity, the use of “rat fever” as a colloquial term for leptospirosis undermines a more holistic understanding of the disease’s causes. If we are to protect people, we must use the correct terms, study the ecology of the disease and use the findings to inform healthcare policy, improve health literacy, and engage with people’s concerns.

Preventing Leptospirosis?

Leptospirosis control can benefit from a ‘One Health’ approach.

- ‘One Health’ is an interdisciplinary approach that recognises the interconnections between the health of humans, animals, plants, and their shared environment.
- People who frequently interact with animals or their urine should exercise particular caution, such as by wearing personal protective equipment like gloves and boots.
- The same goes for workers in flooded fields where there’s a chance of being exposed to contaminated water. They should take extra care if they have cuts or abrasions on their lower extremities.
- Preventing animals from getting infected is also important to reduce the risk of leptospirosis spreading and to limit farmers’ economic losses (when the disease causes reproductive failures in pigs and cattle).
 - This in turn requires sanitary animal keeping conditions, which is also desirable to improve the animals’ health and to prevent the spread of many diseases.
- Given the spike in leptospirosis during the monsoons, it is best to take precautions, including washing one’s arms and legs with an antiseptic liquid after handling animal waste and after working in water.