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1. Osteoporosis

GS 2 (Health)

- **Why in News:** Prevent bone loss with calcium, exercise, and healthy habits, as discussed by experts in an osteoporosis webinar held recently.
- **About Osteoporosis:**

- It is a disease that **weakens the bones**.
- It **makes the bones thinner and less dense** than they should be.
- People with osteoporosis are much more likely to **experience broken bones (bone fractures)**.
- Most people don't know they have osteoporosis until it causes them to break a bone.
- Osteoporosis can make any of the bones more likely to break, but the **most commonly affected bones** include of:
 - Hips (hip fractures)
 - Wrists
 - Spine (fractured vertebrae)
- Osteoporosis occurs when the **creation of new bone doesn't keep up with the loss of old bone**.
- Low level of hormones, like **estrogen in women and testosterone in men** can cause osteoporosis.
- **Symptoms:**
 - Osteoporosis **doesn't have symptoms the way** lots of other health conditions. That's why healthcare providers **sometimes call it a silent disease**.
 - The most **common "symptom"** is **suddenly breaking a bone**, especially after a small fall or minor accident.
 - Once the bones have been weakened by osteoporosis, the common **signs and symptoms** include:
 - **Back pain**, caused by a broken or collapsed bone in the spine.
 - **Loss of height over time**.
 - **A stooped posture**.
- **Treatment:** Treatment for osteoporosis may involve:
 - Making **lifestyle changes**, such as changing the diet and exercise routine
 - **Taking calcium and vitamin D** supplements
 - Using medicines to strengthen bones.

'Calcium intake, exercise crucial for young adults to prevent osteoporosis'

The Hindu Bureau
CHENNAI

Adequate calcium intake, regular physical activity, and avoiding smoking and excessive alcohol consumption are essential for preventing bone loss in young adults, experts said at a recent webinar on osteoporosis organised by Naruvi Hospitals, Vellore, in collaboration with The Hindu.

The session was part of the "Healthy India, Happy India" initiative aimed at promoting health and wellness nationwide.

The webinar, titled "Osteoporosis: what a common man needs to know", featured M.S. Seshadri, consultant and head of endocrinology at Naruvi Hospitals; Sai Krishna Chaitanya, consultant endocrinologist at Naruvi



Hospitals; and Shiram Mahadevan, head of endocrinology at Sri Ramachandra Institute of Higher Education and Research, Chennai. Dr. Chaitanya kicked off the session by explaining that osteoporosis is a condition where weakened bones significantly increase the risk of fractures. "Osteoporosis occurs when the balance between bone resorption and bone remodelling is disrupted, leading to decreased bone

mass," he explained. He noted that bone mass peaks during the third decade of life, after which bone resorption exceeds bone formation, accelerating bone loss.

Dr. Chaitanya also outlined the key risk factors for osteoporosis, including age, gender, low body weight, smoking, excessive alcohol consumption, and a family history of the disease. He added that individuals with low physical activity or a history of fractures after the age of 40 are also at higher risk.

Dr. Seshadri stressed that adequate calcium intake, especially from dairy products, and regular outdoor activity are crucial for building strong bones during the growth years. "Unfortunately, modern lifestyles, with academic pressures and increased

screen time, often limit calcium intake and physical activity, making supplements necessary in some cases," he said.

Dr. Mahadevan discussed treatment options for osteoporosis, explaining that medication choices depend on efficacy, scientific evidence, and the type of fracture being targeted. Bisphosphonates are usually the first line of treatment, while bone-forming agents are preferred for severe osteoporosis or recurrent fractures, especially when bone mineral density is low.

He cautioned that these treatments are typically applicable for 18 to 24 months, and stopping them abruptly could be harmful.

The webinar is available at <https://bit.ly/3PpOW0c>

2. Panchayat Se Parliament 2.0

GS 2 (Governance)

- **Why in News:** Lok Sabha Speaker is set to inaugurate 'Panchayat Se Parliament 2.0' at the Central Hall of Samvidhan Sadan.
- **About Panchayat Se Parliament 2.0:**
 - It will be organised by the **National Commission for Women (NCW)**, in **collaboration with the Lok Sabha Secretariat** and the **Ministry of Tribal Affairs**.
 - The programme is being organised in **commemoration of the 150th birth anniversary of Bhagwan Birsa Munda**, the revered tribal leader and freedom fighter.
 - It will **bring together 502 elected women representatives from Scheduled Tribes across 22 states and Union Territories**.

- Its primary focus is to **empower** these **women representatives** from **Panchayati Raj institutions** by enhancing their understanding of constitutional provisions, parliamentary procedures, and governance.
- The programme also aims to recognise the contributions of these representatives in areas such as education and rural development.
- It will **include workshops, sessions, and a guided tour of key locations** such as the new **Parliament House, Samvidhan Sadan, Pradhanmantri Sangrahalaya, and Rashtrapati Bhawan**.
- The Lok Sabha Speaker will also lead the delegates in reading the Preamble to the Constitution of India during the event.
- This program builds on the success of the **Panchayat Se Parliament 2024 initiative**, which **engaged 500 women sarpanch** from across India.

Govt. launches 'Panchayat Se Parliament 2.0' for women

Lok Sabha Speaker Om Birla will on Monday inaugurate "Panchayat Se Parliament 2.0" which seeks to give insight into the Constitution and parliamentary procedures to over 500 women representatives from Panchayati Raj institutions from across the country. Organised to commemorate the 150th birth anniversary of tribal icon Birsa Munda, the programme will have workshops and sessions, a guided tour of the new Parliament House, Pradhanmantri Sangrahalaya, and Rashtrapati Bhawan for the participants, offering them a deeper understanding of India's legislative process and the functioning of democratic institutions. PTI

3. Zoos put on alert as avian flu kills 3 tigers **GS 3 (Environment)**

- **Why in News:**
 - Three tigers and a leopard at a Nagpur rescue center have died from avian influenza (H5N1), a rare instance of the virus affecting rescued wildlife in India.
 - In response, the Union government has issued an advisory, urging zoos nationwide to remain vigilant, follow the action plan for prevention and containment, and monitor for symptoms in captive animals or nearby areas. The advisory highlights the highly contagious and zoonotic nature of the disease.
- **Avian influenza (H5N1)**
 - **Overview of Bird Flu**
 - Bird flu, or avian flu, is an infectious viral illness primarily affecting poultry and wild birds.
 - Various strains of the virus have circulated among at least 100 bird species, with wild waterfowl like ducks and geese often serving as carriers without severe harm.
 - **About**
 - H5N1 is a type of influenza virus that causes a highly infectious, severe respiratory disease in birds called avian influenza (or "bird flu").
 - Basically, it is a **subtype of the influenza A virus**
 - Influenza A viruses are classified by subtypes based on the properties of their surface proteins.
 - Human cases of H5N1 avian influenza occur occasionally, but it is difficult to transmit the infection from person to person.
 - When people become infected, the mortality rate is about 60%.
 - **Evolution and Global Spread of H5N1**
 - The highly pathogenic H5N1 virus originated from a goose farm outbreak in Guangdong, China, in 1996.

Zoos put on alert as avian flu kills 3 tigers, 1 leopard at rescue centre

SIDDHANT KONDUSKAR
MUMBAI, JANUARY 5

THREE TIGERS and a leopard at a Nagpur rescue centre have succumbed to avian influenza, prompting the Union government to sound an alert for zoos across the country.

This is a rare instance of the highly contagious H5N1 virus affecting rescued wildlife in India. In an advisory, the Central Department of Animal Husbandry and Dairying directed zoos to comply with the action plan on prevention, control and containment.



One of the tigers that died at the Gorewada Rescue Centre in Nagpur.

"It is a highly contagious viral disease with zoonotic ramifications. It is, therefore, advised that

all zoos remain alert and vigilant for any symptoms among captive animals housed in zoos and incidence, if any, in nearby areas," stated the January 3 advisory issued by the department, which comes under the Union Ministry of Fisheries, Animal Husbandry and Dairying.

The animals in question had been relocated to the Gorewada Rescue Centre in Nagpur from Chandrapur in December following instances of conflict with humans.

Within a week of their arrival, however, they began showing symptoms of ill-health.

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- A new version of the virus emerged in Europe in 2020 and rapidly spread to Africa, Asia, North America (2021), South America (2022), and mainland Antarctica (2024), causing widespread illness and death among birds.
- **Impact on Farm and Wild Birds**
 - **Farm Birds:** H5N1 spreads quickly in overcrowded poultry farms, leading to significant outbreaks and fatalities.
 - **Wild Birds:** The virus has caused severe mortality among wild bird populations, including:
 - Great Skuas in Scotland (2021)
 - Barnacle Geese in Solway Firth (2021/22)
 - Thousands of ducks, swans, gulls, and birds of prey like Peregrine Falcons and Golden Eagles across Europe.
 - Endangered species like the **California condor** have been significantly affected, with 21 deaths reported in 2023, constituting nearly 6% of the population.
- **Spread Among Mammals**
 - H5N1 has begun infecting mammals, raising concerns about viral reassortment and increased virulence:
 - **Terrestrial Mammals:** Cases reported among foxes, pumas, skunks, and bears in North America.
 - **Farmed Mammals:** Minks in Spain and Finland have been infected, increasing the risk of cross-species transmission.
 - **Marine Mammals:** Massive die-offs have been observed, including:
 - Over 20,000 sea lions in Chile and Peru.
 - Thousands of seals in the US.
 - 95% mortality among Southern elephant seal pups along the Patagonia coastline (2023), marking the first major elephant seal mortality in half a century.
- **Human Risk**
 - Although humans rarely contract bird flu, infections typically occur through contact with sick birds at poultry farms, where viral loads are high.
- **Zoos put on alert**
 - **India's First Case of Avian Influenza in Animals**
 - Maharashtra reported India's first case of avian influenza (H5N1) among animals.
 - Three tigers and one leopard have succumbed to the virus at a Nagpur rescue center in late December 2024.
 - This marks the first instance of bird flu crossing the species barrier in India.
 - **Government Response and Guidelines**
 - The Union Animal Husbandry Ministry issued a circular urging all States to quarantine infected or symptomatic tigers and other feline species to prevent transmission to humans and other animals.
 - The ministry plans to release detailed guidelines within a week.
 - **Investigation and Containment Efforts**
 - Post-mortem samples from the affected animals tested positive for avian influenza at the National Institute of High Security Animal Diseases (NIHSAD), Bhopal.
 - Authorities suspect contaminated chicken meat could be the source of the infection.
 - A National Joint Outbreak Response Team has been deployed to implement containment measures, while human contacts are being screened as a precaution.

- **Enhanced Biosecurity Protocols**
 - The Ministry directed:
 - Temporary closure of affected establishments to the public.
 - Strengthening biosecurity measures and restricting personnel movement between infected and healthy areas.
 - Thorough disinfection of affected areas and collection of samples for strain identification.
- **Protection for Zoo Staff**
 - Zoo staff are required to use personal protective equipment (PPE), including gloves, masks, and suits.
 - Regular health screenings and hygiene education for zoo personnel have also been mandated.
- **Call for a One-Health Approach**
 - The Ministry emphasized a "One-Health" approach, integrating efforts across human health, animal health, and wildlife sectors to comprehensively address the issue.
 - Immediate attention is needed to mitigate risks to both animal and human health.

4. Arunachal Pradesh's Dormant Anti-Conversion Law Revived After 46 Years **GS 2 (Governance)**

- **Why in News:**
 - The Arunachal Pradesh government is framing rules to implement the **Arunachal Pradesh Freedom of Religion Act, 1978**, which has been dormant for 46 years.
 - The move has reignited debates on religious freedom, indigenous culture, and state intervention in faith matters.
- **What's in the Arunachal Pradesh Freedom of Religion Act?**
 - **Enacted:** 1978 by Arunachal's first Legislative Assembly.
 - **Purpose:** To prohibit religious conversion by force, inducement, or fraudulent means.
 - **Penalties:**
 - Imprisonment up to two years.
 - Fine up to ₹10,000 for forced conversions.
 - **Reporting requirement:**
 - All conversions must be reported to the Deputy Commissioner.
 - Non-compliance penalizes the individual performing the conversion.
 - The Act remained dormant due to the absence of implementation rules.
- **Why was the Arunachal Pradesh Freedom of Religion Act Introduced?**
 - **Diverse ethnic communities:** Arunachal has a rich tapestry of indigenous beliefs, including Mahayana and Theravada Buddhism, and polytheistic practices like Donyi Polo worship.
 - **Missionary inroads:**
 - Christianity entered Arunachal in the 1950s, later than other northeastern states, due to colonial isolation policies and difficult terrain.
 - First church was established in 1957 at Rayang village.
 - **Debates on conversion:** Conversion led to socio-cultural changes in tribes like the Adi, Nocte, and Nyishi, sparking discussions on preserving indigenous cultures in the Assembly.
- **Why has the Arunachal Pradesh Freedom of Religion Act Remained Dormant?**
 - **Opposition by Christian groups:**
 - The Arunachal Christian Forum (formed in 1979) has consistently opposed the Act, calling it "anti-Christian" and prone to misuse.

Why 1978 'anti-conversion' law in Arunachal could now be enforced

SUKRITA BAHARI
 (LAW/ARTS), JANUARY 5

THE ARUNACHAL PRADESH government is working to bring a 1978 law against "forced" conversions out of cold storage by framing rules for its implementation. 46 years after it was enacted.

What is the Arunachal Pradesh Freedom of Religion Act?
 The law, enacted by the then Union Territory of Arunachal Pradesh's first legislative assembly, prohibits religious conversion by force or inducement or by fraudulent means. It penalises punishment of imprisonment for up to two years and a fine of up to ₹10,000 for the offence of "inducement" or "fraudulent means".

Why was the Act introduced?
 Arunachal Pradesh is home to a number of different ethnic tribes and peoples. The Monpa and Sherdukpen of West Arunachal Pradesh followed Theravada Buddhism, while the Khasi and Jaintia of Eastern Arunachal practice Theravada Buddhism.

Why has the Act remained dormant?
 The Act was enacted in 1978 by the then Union Territory of Arunachal Pradesh's first legislative assembly. It remained dormant for 46 years due to opposition from Christian groups and the lack of implementation rules.

Why is the Act back on now?
 In 2022, Advocate Tunde Ramu, who is a former general secretary of the Arunachal Pradesh Christian Forum (APCF), filed a PIL in the Supreme Court of India, challenging the Act. The court has asked the government to implement the Act.

What is the Christian Forum's stance?
 The Arunachal Christian Forum has consistently opposed the Act, calling it "anti-Christian" and prone to misuse. It has also filed a PIL in the Supreme Court of India, challenging the Act.

- Christianity now constitutes 30.26% of the population (2011 Census), the largest religious group in the state.
- **Political sensitivities:** Successive Chief Ministers avoided implementing the Act due to fears of alienating a significant voter base.
- **External influences:** The BJP government and RSS's support for institutionalizing indigenous faiths renewed attention on the Act.
- **Why is the Arunachal Pradesh Freedom of Religion Act Back Now?**
 - **Legal push**
 - In 2022, advocate Tambo Tamin filed a PIL in the Guwahati High Court, seeking rules for the Act's implementation.
 - The court directed the state to finalize draft rules within six months.
 - **Preserving indigenous culture:** Experts emphasize the Act's role in preventing the erosion of traditional practices amid rising conversions.
- **Conclusion:**
 - The revival of the Arunachal Pradesh Freedom of Religion Act, 1978, underscores the ongoing tensions between protecting indigenous cultures and safeguarding religious freedom.
 - As implementation looms, debates are expected to intensify, reflecting the delicate balance between faith, politics, and identity in the state.

5. KM3NeT Project

GS 3 (Science and tech)

- **Why in News:** Scientists are deploying two telescopes which are part of the Cubic Kilometre Neutrino Telescope or KM3NeT to detect high-energy neutrinos, also known as ghost particles, under the Mediterranean Sea.
- **About KM3NeT Project:**
 - It is a research infrastructure housing the next generation **neutrino telescopes** with a volume of at least one cubic kilometre.
 - It uses **Cherenkov radiation** (light that neutrinos produce when they interact with a water or ice molecule) to study neutrinos.
 - As a European research infrastructure, it is located in the **Mediterranean Sea** and involves collaboration among multiple countries.
 - **Key components:**
 - **ARCA (Astroparticle Research with Cosmics in the Abyss):** It will help scientists in searching neutrinos from distant astrophysical sources such as **supernovae, gamma ray bursters or colliding stars**. It is located offshore Sicily, Italy.
 - **ORCA (Oscillation Research with Cosmics in the Abyss):** This telescope is the instrument for KM3NeT scientists studying neutrino properties exploiting neutrinos **generated in the Earth's atmosphere**. It is located offshore of France.
 - These telescopes are much like the **IceCube Neutrino Observatory**, which can detect high-energy neutrinos from deep space but is under the frozen ice in the Antarctic rather than being in the water.
 - Arrays of thousands of optical sensors will detect the faint light in the deep sea from charged particles originating from **collisions of the neutrinos and the Earth**.
- **What is IceCube Neutrino Observatory?**
 - It is a device located at the **Earth's South Pole** that detects subatomic particles called neutrinos. Built and maintained by the IceCube Collaboration, it consists of approximately 350 physicists from 58 institutions across 14 countries, led by the University of Wisconsin–Madison.
 - IceCube collaborators address several big questions in physics, like the **nature of dark matter and the properties of the neutrino itself**.

6. Golden Jackal

- **Why in News:** Environmentalists say that golden jackals appear to be adapting to their changing environment and are no longer avoiding humans.
- **About Golden Jackal:**
 - The golden jackal, also known as the **common jackal**, is a medium-sized wolf-like canid.
 - It is **strictly nocturnal** in areas inhabited by humans, but may be partly diurnal elsewhere.
 - They dig caverns for shelter, or use crevices in rocks, or caverns that were dug by other animals.
 - They are **monogamous**, meaning they mate for life.
 - **Diet:** Golden jackals are **omnivores**. These opportunistic foragers have a rather diverse diet.
 - **Habitat:** These animals are abundant in valleys and along rivers and their tributaries, canals, lakes, and seashores, but are rare in foothills and low mountains.
 - **Distribution:** North and East Africa, Southeastern Europe and South Asia to Burma.
 - They are quite widespread across India. **Right from the Himalayan foothills**, down to the Western Ghats, the Golden Jackal has a wide distribution.
 - **Conservation Status:**
 - **IUCN:** Least Concern
 - **CITES:** Appendix III
 - **Wildlife Protection Act, 1972:** Schedule I
 - **Threats:** Habitat loss from encroachments and poor management threaten their survival.
 - **Ecological Significance:** They play a crucial role in maintaining the biodiversity of mangrove and grassland ecosystems.