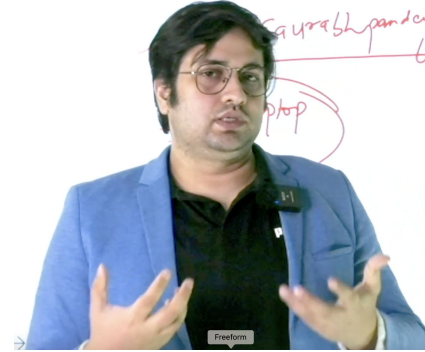


Topics - MINDS MAPS included



- Defence in news
- (fMRI)
- Blue Moon
- Riptides
- Tugboats
- Why the Recent Earthquake in Russia?
- Seym River
- Snowball Earth Concept
- 'Zoopharmacognosy
- Understanding the Central Protection Act
- Mains



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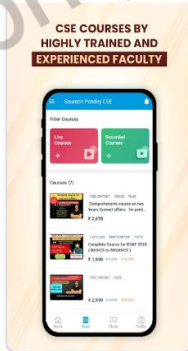
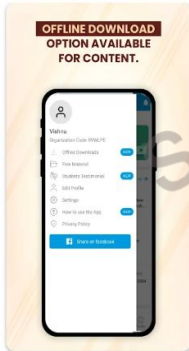
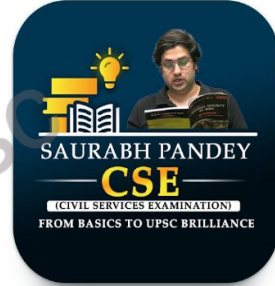
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Topic- Defence in news

- **Defence Minister Rajnath Singh inaugurated a new Maritime Rescue Coordination Centre (MRCC) of the Coast Guard in Chennai**
- **At the event, he also inaugurated two new Coast Guard units — the Regional Marine Pollution Response Centre (RMPRC) in Chennai and a Coast Guard Air Enclave in Puducherry**

Topic- (fMRI)

- Like the heart, the brain has electrical activity, too.
- A functional magnetic resonance imaging (fMRI) machine can capture this activity and the way it changes over time through electric signals.
- In those with mental illness, the underlying brain circuits that connect different regions don't activate normally.
- One region can have more intense electrical activity than it does in a healthy person.

Magnetic Resonance Imaging (MRI)



Overview

Definition: A medical imaging technique used to visualize internal structures of the body.

Applications: Diagnosing diseases, planning treatments, and monitoring the effectiveness of therapies.

Advantages: No ionizing radiation, high-resolution images, and ability to view soft tissues.

Key Areas

Types of MRI

Functional MRI (fMRI): Measures brain activity by detecting changes associated with blood flow.

Cardiac MRI: Evaluates heart structures and functions.

Magnetic Resonance Angiography (MRA): Imaging of blood vessels using MRI techniques.



Clinical Uses

Neurology: Diagnosing conditions like multiple sclerosis and brain tumors.

Orthopedics: Assessing joint and soft tissue injuries.

Cardiology: Evaluating heart diseases and conditions.

Technological Advances

Artificial Intelligence in MRI

Enhances image analysis and diagnosis accuracy.

Automates processes for efficiency.

Recent Research Innovations

AI-enabled cardiac MRI for cardiovascular disease screening: [Read More](#)

Non-invasive mapping of brown adipose tissue



Challenges

Cost: High cost of MRI machines and procedures.

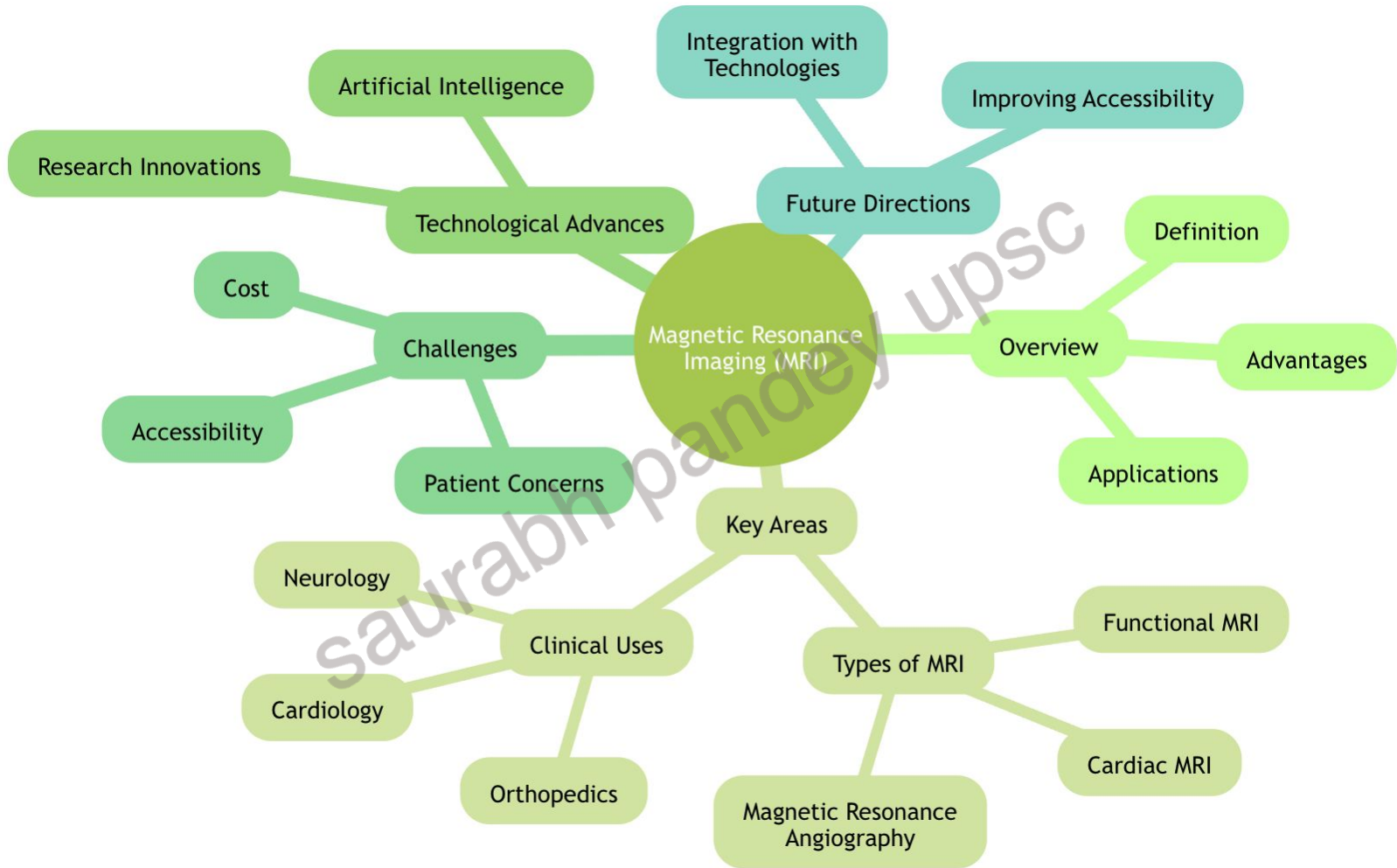
Accessibility: Limited availability in rural areas.

Patient Concerns: Claustrophobia and anxiety during scans.

Future Directions

Improving Accessibility: Developing portable MRI machines.

Integration with Other Technologies: Combining MRI with EEG and other imaging techniques for better diagnostics.



Topic- Blue Moon

- on April 5, 1815, Mt. Tambora in contemporary Indonesia produced the most powerful volcanic eruption in recorded history.
- The previous year, the Mayon volcano had erupted powerfully in the Philippines.
- The effects of these volcanoes, combined with other climatic factors, lowered the temperature of the earth by 0.4–0.7 °C in 1816, producing what has since been called the “year without summer”.
- The dust and other small particles lingering in the air could have caused the moon to look blue,

Topic- Riptides



Overview of Riptides

Definition: Strong currents created by the movement of water.

Causes: Waves, tides, and underwater topography.

Locations: Commonly found at beaches and coastal areas.

Safety Concerns

Drowning Risks: Riptides can pull swimmers away from shore.

Increased Incidents: Recent news highlights the danger during storms.

Lifeguard Shortages: Many beaches face staffing issues affecting safety.

Topic- Dark Commercial Patterns



Overview of Dark Commercial Patterns

Definition: Dark patterns are user interface elements designed to trick users into actions they might not want to take.

Examples: Misleading buttons, hidden opt-out options, and aggressive upselling.

Dark patterns manipulate user behavior to benefit businesses, often at the expense of consumer choice.

Types of Dark Patterns

Forced Continuity: Users are charged after a free trial without clear reminders.

Hidden Costs: Additional fees that appear late in the checkout process.

Bait and Switch: Advertising a product at a low price that isn't available, pushing users toward a more expensive option

Regulation of Dark Patterns

Current Laws: Review of existing regulations targeting deceptive practices.

Proposed Changes: Discussion of potential new regulations at national and international levels.

.

Term in news

- **Tugboats play** a crucial and versatile role in marine transport, providing essential services that ensure the safety, efficiency, and environmental protection of maritime operations.
- These powerful vessels are designed to tow, push, and maneuver larger ships, barges, and other floating objects in various waterways, including harbors, rivers, and open seas.

Topic- Why the Recent Earthquake in Russia?



Context and Background

Location: Russia's Far East, specifically near the Kamchatka Peninsula.

Magnitude: Recent earthquake measured 7.0 on the Richter scale.

Aftermath: Triggered volcanic eruptions, notably of the Shiveluch volcano.

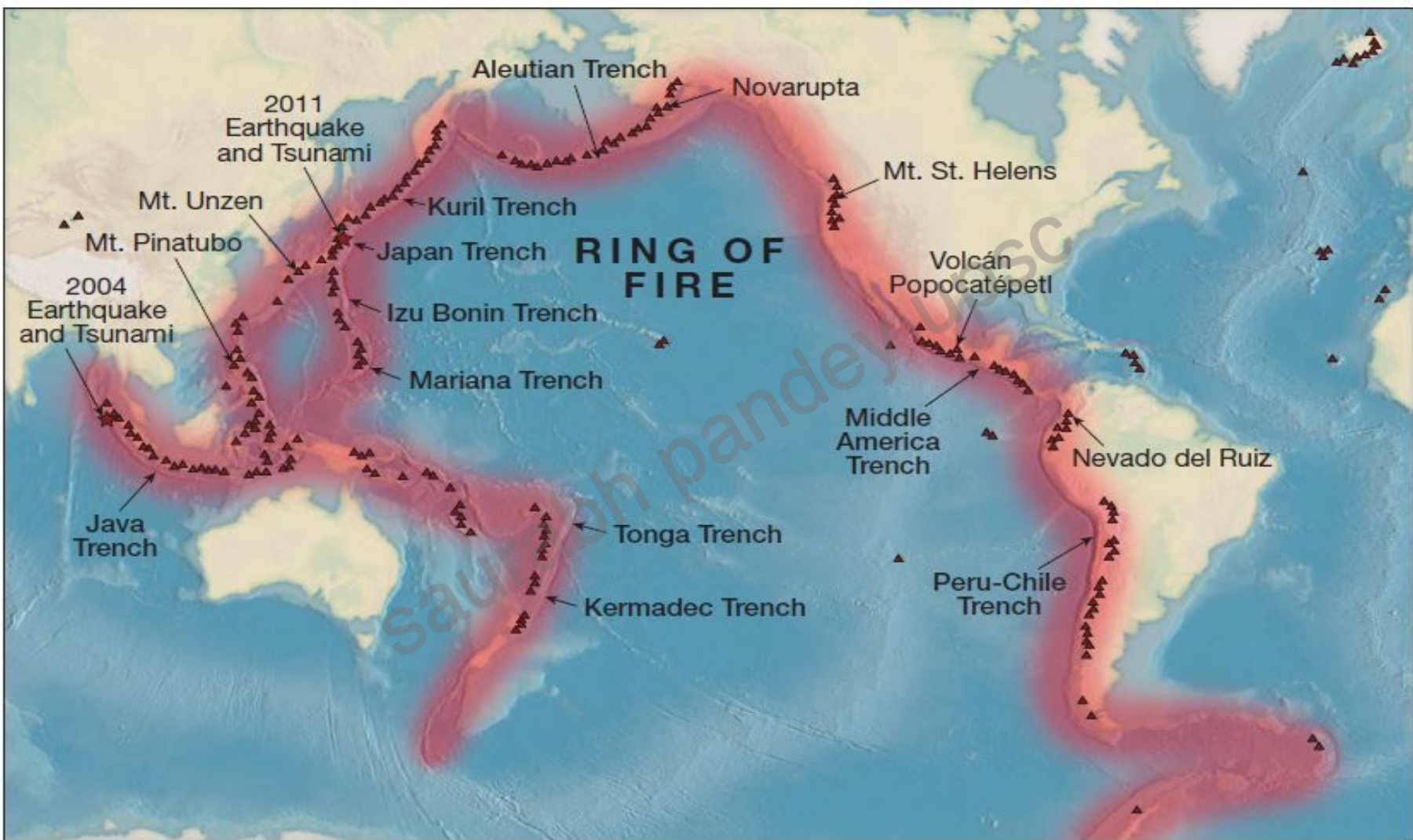
Causes of the Earthquake

Tectonic Activity:

Movement of tectonic plates in the region.
Subduction zones contributing to seismic activity.

Historical Patterns:

Russia's Far East is known for its seismic history.



Impacts of the Earthquake

Volcanic Eruptions:

Eruption of Shiveluch volcano following the quake.
Ash clouds reported to rise 5 miles high.

Tsunami Warnings:

Initial warnings issued but later lifted.



Focus ---.>> The Shiveluch volcano

- **The Shiveluch volcano is an active stratovolcano located in the Kamchatka Peninsula in the far eastern part of Russia.**
- **It is one of the most active volcanoes in Kamchatka, which is a region known for its high concentration of volcanoes due to its location on the Pacific Ring of Fire.**
- **The volcano is situated in the central part of the peninsula and is part of the Kamchatka Volcanic Arc, which is a chain of volcanoes formed by the subduction of the Pacific Plate beneath the Okhotsk Plate.**

Mapping

Seym River

Overview

Location: Eastern Europe, flows through Russia and Ukraine

Length: Approximately 840 km

Importance: Vital for local ecosystems, agriculture, and transportation

Recent Events

Military Actions: Ongoing conflicts affecting the region, including bridge destruction

Environmental Impact: Changes in water quality and ecosystem due to military activities



- The Seym River is a river located in the western part of Russia, in the Yaroslavl Oblast. It is a right tributary of the Volga River, one of the major rivers in Europe
- The Seym River is a part of the **Volga-Baltic Waterway**, which connects the **Volga River to the Baltic Sea via the Neva River and Lake Ladoga.**
- This waterway is of historical significance as it was an important trade route in the past, and it continues to be used for navigation and recreational purposes
- Seym River flows through several **small villages and towns, including the town of Myshkin**, which is **situated on the Volga River near the confluence with the Seym**



Mapping in news ---->

Kursk is a city and the administrative center of Kursk Oblast, a region in western Russia.

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Topic- Snowball Earth Concept



Overview

The Snowball Earth hypothesis suggests that the Earth was once completely or nearly completely frozen.

This event likely occurred during the Cryogenian period (approximately 720 to 635 million years ago).

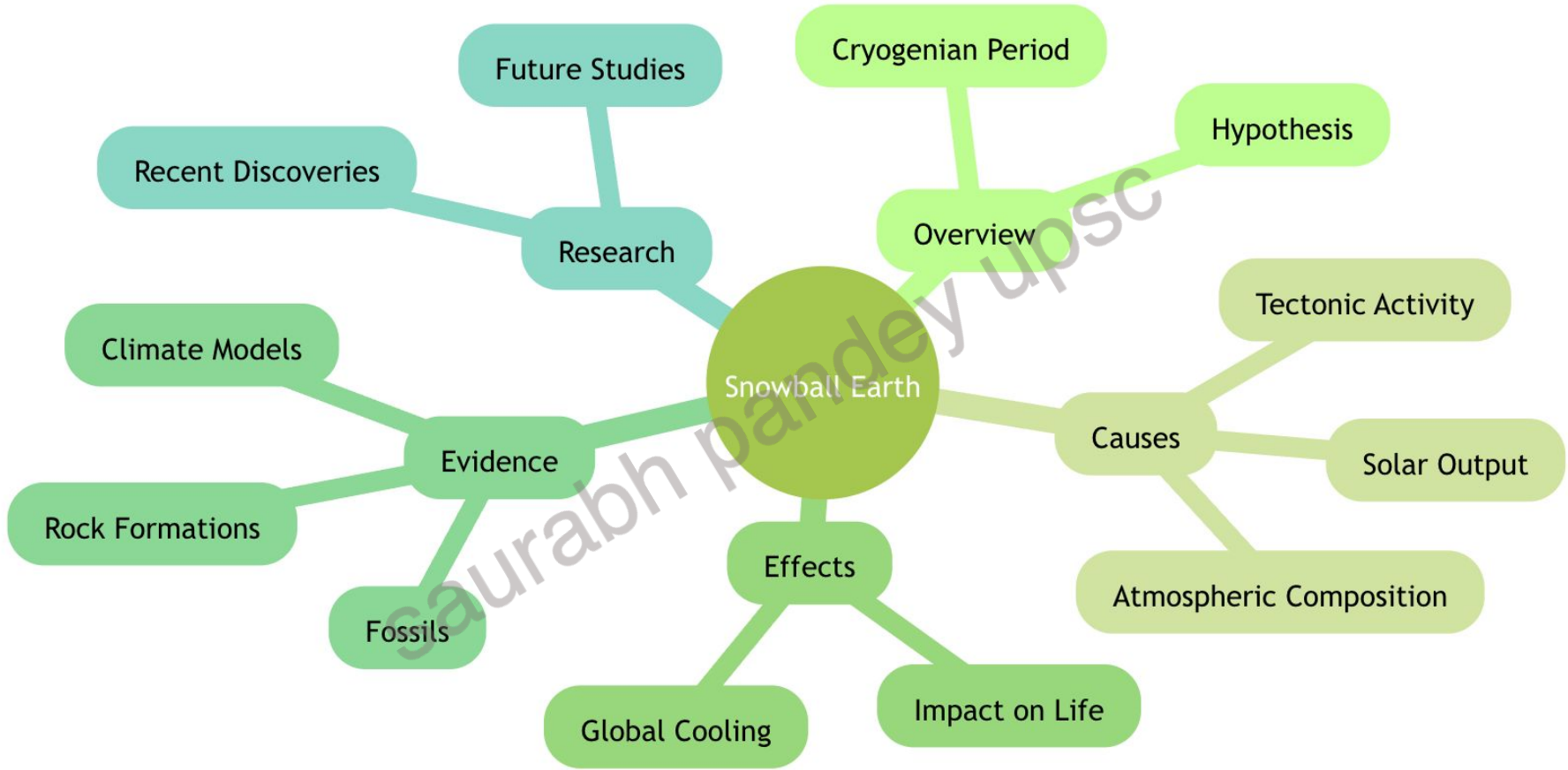
Causes

Tectonic Activity

- Movement of continents affecting ocean currents.
- Solar Output 
- Changes in the sun's energy output
- Atmospheric Composition
- Elevated levels of CO₂ leading to a cooling effect.

Effects

- **Global Cooling** ❄️
 - Drastic drop in temperatures affecting ecosystems.
- **Impact on Life** 🦠
 - Possible mass extinction events and evolution of multicellular organisms.
-
- **Mapping** ----> The Port Askaig Formation is a geological formation located in Scotland, primarily recognized for its significance in the study of the Snowball Earth hypothesis.



Topic - 'Zoopharmacognosy

- **'Zoopharmacognosy: the self-medication behaviour of animals,**
- **Dogs medicate themselves by chewing grass and vomiting it to get rid of infections in the stomach.**
- **Pregnant lemurs nibble on tamarind leaves to aid milk production, and pregnant elephants in Kenya eat the leaves of some plants of the Boraginaceae family to induce delivery.**



- **The medicinal plant *Fibrourea tinctoria* that the Sumatran orangutan used for wound healing contains the anti-inflammatory molecule berberine.**
- **Called ‘Akar Kunyi’ locally, the plant is used in the traditional medical system there.**
- **And in the southern subtropical regions, its equivalent is called Oleander and is used as a curative for jaundice.**
- **The shrub aloe vera, which is found in India (where it is called ‘gwar patta’ in Hindi and ‘katrazhai’ in Tamil) and many parts of Asia and Africa, has antimicrobial, anti-inflammatory, and wound healing properties.**

- **China has had the Zhongyi system for the past 5,000 years, Arabia for 4,000 years, and the Indian Ayurvedic system for 5,000 years.**
- **They all use various plants, fruits and roots such as Rauwolfina serpentina (sarpagandha in Hindi), holy basil (tulsi), aloe vera, wild garlic, onion, oregano, artichokes, camphor, coconut, and castor oil.**

Topic- Understanding the Central Protection Act

- **Defining the Act:** The 'Prevention of Violence Against Healthcare Professionals and Clinical Establishments Bill, 2022,' also known as the 'Central Protection Act,' aims to provide a legal framework to address violence against medical professionals.
- **Scope and Coverage:** The Act encompasses a wide range of healthcare professionals and clinical establishments, aiming to ensure their safety and security in the workplace.
- **Public Awareness:** Advocacy groups and medical institutions have been actively raising awareness about the need for the Central Protection Act, emphasizing its potential impact on the healthcare ecosystem.

-



Key Stakeholders and Advocacy

- **Medical Community's Demands:** Amid the demand for a Central Act protecting medical workers, the Indian Medical Association (IMA) has been at the forefront of advocating for the enactment of the Central Protection Act.
- **Student Involvement:** Medical students and professionals have actively participated in the advocacy for the Central Protection Act, recognizing its significance in ensuring a safe and secure environment for healthcare professionals.
- **Public Support:** The widespread support for the Central Protection Act reflects the recognition of the critical role played by healthcare professionals and the need to safeguard their well-being.

Ensuring Workplace Safety

- **Security Measures:** The Act emphasizes the implementation of security measures within clinical establishments to ensure the safety and well-being of healthcare professionals.
- **Emergency Response:** Provisions for emergency response protocols and support systems are integral to the Act, enabling swift assistance in the event of violent incidents.
- **Training and Preparedness:** The Act underscores the importance of training programs and preparedness initiatives to equip healthcare professionals with the necessary skills to handle security-related challenges.

•



: Legal Framework and Enforcement

- **Judicial Processes:** The Central Protection Act outlines the judicial processes and legal mechanisms for addressing cases of violence against healthcare professionals, ensuring a fair and expeditious resolution.
- **Law Enforcement Collaboration:** Collaboration between healthcare institutions and law enforcement agencies is a key aspect of the Act, fostering a coordinated approach to addressing security concerns.
- **Accountability and Deterrence:** The Act aims to establish a framework of accountability and deterrence, sending a strong message against acts of violence targeting healthcare professionals.

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