

UPSC CURRENT AFFAIRS NOTES 20-12-2023

Mitochondrial Diseases

A recent study has revealed that about a quarter of mitochondrial disease patients suffer from malnutrition.



About the Mitochondrial Diseases:

Mitochondrial diseases are a group of conditions that affect how mitochondria work in your body.

What are Mitochondria?

Mitochondria are membrane-bound cell organelles that generate most of the chemical energy needed to power the cell's biochemical reactions.

They make it by combining oxygen with the fuel molecules (sugars and fats) that come from your food.

Chemical energy produced by the mitochondria is stored in a small molecule called adenosine triphosphate (ATP).

Generally, mitochondria, and therefore mitochondrial DNA, are inherited only from the mother.

When the mitochondria are defective, the cells do not have enough energy. The unused oxygen and fuel molecules build up in the cells and cause damage.



Mitochondrial diseases can affect almost any part of your body, including the cells of your Brain, Nerves, Muscles, Kidneys, Heart, Liver, Eyes, Ears, and Pancreas.

Causes:

Genetic mutations cause these primary mitochondrial diseases. They usually happen before age 20, and some are more common in infants.

Mitochondrial dysfunction can also occur when mitochondria don't work as well as they should due to another disease or condition. These are called secondary mitochondrial diseases.

Symptoms:

The symptoms of mitochondrial disease can vary. It depends on how many mitochondria are defective and where they are in the body.

Sometimes only one organ, tissue, or cell type is affected. But often, the problem affects many of them.

Muscle and nerve cells have especially high energy needs, so muscular and neurological problems are common.

Treatment:

There are no cures for these diseases, but treatments may help with symptoms and slow down the disease.

They may include physical therapy, vitamins and supplements, special diets, and medicines.

Major Dhyan Chand Khel Ratna Award

India's badminton stars Chirag Shetty and Satwik Sai Raj Rankireddy won the Major Dhyan Chand Khel Ratna award announced by the Ministry of Youth Affairs and Sports recently.



About Major Dhyhan Chand Khel Ratna Award:

Named after the hockey wizard Major Dhyhan Chand (1905–79), an Indian legendary field hockey player, the "Major Dhyhan Chand Khel Ratna Award" (erstwhile Rajiv Gandhi Khel Ratan Award) is the highest sporting honour in India.

Instituted in 1991–1992, the award is conferred annually by the Ministry of Youth Affairs and Sports, Government of India.

Eligibility:

The spectacular and most outstanding performance in the field of sports and games at the international level, i.e. Olympic/Asian/Commonwealth/World Games/Championships/World Cup and equivalently recognized international tournaments, by a sportsperson over a period of four years immediately preceding the year during which the award is to be given.

During the years when Olympic Games, Commonwealth Games and Asian Games are held, the achievements of the sportspersons in these Games and other abovementioned tournaments up to the conclusion of the Olympic Games/Commonwealth/Asian Games, as the case may be, will also be considered.

Sportspersons who have been penalised or against whom an enquiry is pending or ongoing for the use of drugs/substances banned by the World Anti-Doping Agency (WADA) will not be eligible for the award.

General Conditions:

No award will be made for a second time to the same person.

There will be only one award every year to be given to an individual sportsperson. This condition will be relaxed only in exceptional circumstances.

The award may be given posthumously if such an occasion arises.



The Government of India may cancel or annul the award for any recipient for specific reasons, including doping.

Benefits: The award will consist of the following:

A cash amount of ₹25,00,000, which is exempt from income tax and wealth tax.

A Certificate of honour to each sportsperson.

One medal to each sportsperson.

World Bank's latest Migration and Development Brief

Recently, the World Bank's latest Migration and Development Brief was released.

Findings of the Brief

Remittances to low- and middle-income countries (LMICs) grew an estimated 3.8% in 2023, a moderation from the high gains of the previous two years.

In 2023, remittance flows to LMICs are estimated to have reached \$669 billion as resilient labor markets in advanced economies and Gulf Cooperation Council (GCC) countries continue supporting migrants' ability to send money home.

By region, remittance inflows grew for Latin America and the Caribbean (8%), South Asia (7.2%), East Asia and the Pacific (3%), and Sub-Saharan Africa (1.9%).

Flows to the Middle East and North Africa fell for the second year, declining by 5.3% mainly due to a sharp drop in flows to Egypt. Remittances to Europe and Central Asia also fell by 1.4% after gaining more than 18% in 2022.

The United States continued to be the largest source of remittances. The top five remittance recipient countries in 2023 are India (\$125 billion), Mexico (\$67 billion), China (\$50 billion), the Philippines (\$40 billion), and Egypt (\$24 billion).

Economies where remittance inflows represent substantial shares of gross domestic product (GDP) – highlighting the importance of remittances for funding current account and fiscal shortfalls – are Tajikistan (48%), Tonga (41%), Samoa (32%), Lebanon (28%), and Nicaragua (27%).



Based on the trajectory of weaker global economic activity, growth of remittances to LMICs is expected to soften further to 3.1% in 2024. Driving the moderated forecast are a slowing economic growth and the prospect of weaker job markets in several high-income countries.

Additional downside risks include volatile oil prices and currency exchange rates, and a deeper-than-expected economic downturn in high-income countries.

During crises, migrants have weathered risks and shown resilience to support families back home. But high inflation and subdued global growth is affecting how much money they can send.

Labor markets and social protection policies in host countries should be inclusive of migrants, whose remittances serve as a vital lifeline for developing countries.”

According to the Bank’s Remittances Prices Worldwide Database, remittance costs remain persistently high, costing 6.2% on average to send \$200 as of the second quarter of 2023. Compared to a year ago, sending money to all regions was more expensive, with the Middle East and North Africa being the exception.

Banks continue to be the costliest channel for sending remittances (with an average cost of 12.1%), followed by post offices (7%), money transfer operators (5.3%), and mobile operators (4.1%).

“Remittances are one of the few sources of private external finance that are expected to continue to grow in the coming decade. They must be leveraged for private capital mobilization to support development finance, especially via diaspora bonds.

Remittance flows to developing countries have surpassed the sum of foreign direct investment and official development assistance in recent years, and the gap is increasing.

A special section of the Brief describes how diaspora finances can be mobilized for development and strengthening a country’s debt position. Diaspora bonds can be structured to directly tap diaspora savings held in foreign destinations.

Many countries provide for non-resident deposits to attract diaspora savings. However, unlike diaspora bonds, such savings tend to be short-term and volatile.



Future inflows of remittances can be used as collateral to lower the costs of international borrowings by developing countries.

Due to their large size relative to other sources of foreign exchange, counter-cyclical nature and indirect contribution to public finances, remittances can also help improve a country's sovereign ratings and its ability to repay debt.

Regional Remittance Trends

Remittances to East Asia and the Pacific increased by an estimated 3% to reach \$133 billion in 2023. Excluding China, remittances to the region grew an estimated 7% to \$83 billion in 2023, supported by the sustained growth in remittance flows to the Philippines, which has migrants in a well-diversified set of host destinations across the world. The average cost of sending \$200 to the region was 5.9% in the second quarter of 2023. In 2024, remittance growth to the region is estimated to be 2.4%.

Remittance flows to Europe and Central Asia are estimated to have declined by 1.4% to \$78 billion in 2023. The subdued growth in 2023 is due mainly to an unusually high base level posted in 2022, driven by huge amounts of money transfers from Russia, and a lingering weakness in flows to Russia and Ukraine. Depreciation of the Russian ruble against the U.S. dollar has also decreased the value of money transfers from Russia. The average cost of sending \$200 to the region was 6.9% in the second quarter of 2023 (excluding Russia). In 2024, remittances are projected to post a decline of 1.2%.

Remittance flows to Latin America and the Caribbean are expected to increase by 8% to reach \$156 billion in 2023. The strong labor market in the United States positively impacted remittance flows. Remittances to Mexico, the region's biggest recipient, are projected to increase by 9.7%. The growth of remittances is expected to be 45% in Nicaragua, 9% in Guatemala, and 7.5% in Colombia. The average cost of sending \$200 to the region was 6.1% in the second quarter of 2023. Growth in remittances to the region is expected to slow to 4.4% in 2024.

Remittances to the Middle East and North Africa are expected to decline again in 2023, falling by about 5.3% to \$61 billion in 2023, driven mainly by a sharp drop in flows to Egypt. For Egypt, a significant gap between the official exchange rate and the parallel market likely caused a large part of remittances to be unrecorded. Meanwhile, remittance flows to the Maghreb countries experienced a gain, offsetting some of the decline. Sending \$200 to the region

cost 5.9% on average in the second quarter of 2023. In 2024, remittance flows are projected to recover to a 2.1% gain based on an expected turnaround in flows to Egypt.

Remittance flows to South Asia are estimated to have grown 7.2% in 2023 to reach \$189 billion, tapering off from the over 12% increase in 2022. The increase is attributable entirely to remittance flows to India, which are expected to beat previous forecasts by \$14 billion and reach \$125 billion in 2023. The key drivers of remittance growth in 2023 are a historically tight labor market in the United States, high employment growth in Europe reflecting extensive leveraging of worker retention programs, and a dampening of inflation in high-income countries. Sending \$200 to the region cost 4.3% on average in the second quarter of 2023. In 2024, growth in remittance flows is expected to fall to 5% due to projected weaker economic growth in the United States, the Euro Area, and GCC countries, major hosts of migrant workers from the region.

Remittance flows to Sub-Saharan Africa are expected to have increased by about 1.9% in 2023 to \$54 billion, driven by strong remittance growth in Mozambique (48.5%), Rwanda (16.8%), and Ethiopia (16%). Remittances to Nigeria, accounting for 38% of remittance flows to the region, grew by about 2%, while two other major recipients, Ghana and Kenya, posted estimated gains of 5.6% and 3.8%, respectively. Fixed exchange rates and capital controls are diverting remittances to the region from official to unofficial channels. In 2024, remittance flows to the region are projected to increase by 2.5%. Sending \$200 to the region cost 7.9% on average in the second quarter of 2023.

WORLD'S LARGEST MEDITATION CENTRE





Prime Minister Narendra Modi inaugurated the Swarved Mahamandir, a magnificent seven-floor temple located in Varanasi's Umaraha area which is the world's largest meditation centre.

The visit marked the centenary celebration of Vihangam Yoga and the establishment of Vihangam Yog Sansthan by Sadguru Sadafal Deoji Maharaj, a renowned 19th-century spiritual leader.

Architectural Marvels

Design: The temple features an impressive design, including 125-petal lotus domes and can accommodate 20,000 individuals for meditation.

Location: Situated in the Umaraha area, it covers an expansive area of 3,00,000 square feet, approximately 12 km from Varanasi's city center.

Foundation and Construction: Laid in 2004, the temple's construction involved collaborative efforts from 600 workers and 15 engineers.

Distinctive Features

Intricate Details: The temple boasts teakwood ceilings and doors adorned with intricate carvings, along with 101 fountains enhancing its aesthetic appeal.

Spiritual Emphasis: Verses from the Swarveda, a spiritual text by Sadguru Shri Sadafal Deoji Maharaj, adorn the walls of the seven-floor superstructure.

Materials and Garden: Pink sandstone embellishes the walls, and a medicinal herb garden adds to the temple's beauty.

Spiritual Significance

Swarved Mahamandir: Named after the Swarveda, the temple aims to promote the teachings of this spiritual text.

Purpose: It aims to radiate a spiritual aura, spreading a state of peaceful awareness worldwide.

Teachings: The temple advocates Brahm Vidya from the Swarveda, promoting spiritual wisdom and unwavering peace.

Teachings' Focus: Swarved Mahamandir focuses on propagating Brahm Vidya from the Swarveda, aiming to enlighten seekers spiritually.



Worldwide Influence: The temple's vision is to illuminate humanity and inspire a state of serene consciousness globally.

Meditation in India

Historical Significance:

Ancient Origins: The practice of meditation finds its origins in ancient Indian scriptures like the Vedas, Upanishads, and the Bhagavad Gita, dating back thousands of years.

Vedic Period: Early references to meditative practices were primarily linked to Vedic rituals, focused on mental concentration and spiritual contemplation.

Spiritual Heritage: Meditation flourished within the teachings of great spiritual leaders like Buddha, Mahavira, Adi Shankaracharya, and others.

Meditation Traditions:

Yoga and Meditation: Yoga, a comprehensive system that includes physical postures (asanas), breath control (pranayama), and meditation, originated in India. Patanjali's Yoga Sutras, dating back to around 200 BCE, outline meditation practices as part of the eight-fold path to enlightenment.

Vipassana and Mindfulness: The practice of Vipassana, popularized by Gautama Buddha, focuses on mindfulness and insight, observing sensations and thoughts to achieve self-awareness and liberation from suffering.

Jain Meditation: Jainism emphasizes deep contemplation, focusing on self-realization, shedding karmic bondage, and achieving spiritual purity through meditation.

Transcendental Meditation (TM): TM, introduced by Maharishi Mahesh Yogi in the mid-20th century, is a technique involving silent repetition of a mantra, aiming for inner peace and transcendence.

Influence on Culture and Society:

Religious Practices: Meditation is integral to various religious practices in India, including Hinduism, Buddhism, Jainism, and Sikhism, forming a core aspect of spiritual rituals and daily routines.

Ashrams and Spiritual Centers: Across India, numerous ashrams, monasteries, and spiritual centers serve as hubs for meditation retreats, teachings, and spiritual guidance.



Cultural Integration: Meditation has transcended religious boundaries, becoming an integral part of India's cultural fabric, influencing art, literature, music, and traditional healing practices.

TEMPO SATELLITES

NASA's new satellite to hourly measure air pollution hourly has shown significant progress and now the space agency officials are already thinking about ways to extend its life.

TEMPO is NASA's first Earth-observation satellite in geostationary orbit and has developed further from previous polar-orbiting satellites provided daily observations to provide 10 to 12 daily scans.

Mission and Objectives

Purpose: TEMPO is a space-based ultraviolet–visible spectrometer designed to monitor air pollution across greater North America.

Measurements: It provides high-resolution, hourly data on atmospheric pollutants like ozone, nitrogen dioxide, and formaldehyde.

Instrumentation and Operation

Spectrometer Design: TEMPO's ultraviolet–visible spectrometer measures reflected sunlight from the Earth's atmosphere and dissects it into 2,000 component wavelengths.

Geostationary Host: Hosted as a payload on a commercial geostationary communication satellite, TEMPO maintains a constant view of North America.

Coverage Area: Scans the region from the Pacific Ocean to the Atlantic Ocean and from the Alberta oil sands to Mexico City.

Constellation and Collaborations



Geostationary Constellation: TEMPO contributes to a constellation of pollution-monitoring assets, including ESA's planned Sentinel-4 and South Korea's Geostationary Environment Monitoring Spectrometer (GEMS).

Partnerships: Developed as a collaboration between NASA and the Smithsonian Astrophysical Observatory.

Integration and Launch

Host Satellite: TEMPO resides on the Intelsat 40e satellite, built by Maxar Technologies, responsible for payload integration.

Launch Date: It was sent aloft in April and built by Ball Aerospace.

Program

Earth Venture-Instrument Program: TEMPO is NASA's inaugural Earth Venture-Instrument (EVI) mission.

EVI's Role: Part of NASA's Earth System Science Pathfinder (ESSP) program office, supporting innovative, low-cost missions driven by scientific research and applications.

Competitive Selection: Selected through competitive solicitations, EVI missions address various areas of Earth science.

Other Earth Venture Missions

Nature of Missions: EVI missions are characterized as small-sized, competitively selected orbital missions or instrument missions of opportunity.

Examples: Include missions like NASA-ISRO Synthetic Aperture Radar (NISAR), Surface Water and Ocean Topography (SWOT), ICESat-2, and others like Gravity Recovery and Climate Experiment Follow On (GRACE-FO), Cyclone Global Navigation Satellite System (CYGNSS), and Ecosystem Spaceborne Thermal Radiometer Experiment on Space Station (ECOSTRESS), among others.

Future Prospects

Extended Lifespan Goals: While initially planned for a 20-month operation, NASA and Intelsat are aiming for an extended functionality of 10-15 years for TEMPO. **Precursor for Future Missions:** TEMPO's success sets the stage for



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