



Age Determination Techniques

For Prelims: Age Determination Technique, Supreme Court, Ossification Test, Wisdom Teeth, Epigenetic Clock Technique, Sustainable Development Goal 16, Registration of Births and Deaths Act, 1969

For Mains: Age Determination Technique, Government Policies & Interventions

Why in News?

In November 2022, over four years after the gang rape and murder of an eight-year-old girl in Kathua, the [Supreme Court](#) held that one of the accused persons, who claimed to be a juvenile at the time of the commission of the offence, be tried as an adult.

What are the Different Age Determination Techniques?

- **Ossification Test:**
 - The most popular test for **determining age is the ossification test.**
 - The **extent of ossification (i.e., calcification) and the union of epiphysis (rounded end of a long bone) in bones**, particularly long bones such as radius and ulna, humerus, tibia and fibula, and femur, are helpful in estimating age.
 - Though the **variations in climatic, dietetic, hereditary and other factors affect the extent of ossification** in different regions, a fairly close estimate within a margin of two years (for example, 16-18 years), allowing a margin of error of six months on either side (15.5 years or 18.5 years) may be made from puberty to the consolidation of the skeleton.
- **Wisdom Teeth:**
 - The **presence, absence, and eruption of wisdom teeth** can be used as a method of estimating the age of an individual.
 - Wisdom teeth, **also known as third molars, are the last teeth to emerge in the mouth** and they usually appear in the late teenage years or early adulthood.
 - This method is **based on the fact that the eruption of wisdom teeth follows a predictable pattern** and can be used to determine the age of an individual within a range of a few years.
 - However, it is **important to note that this method is not completely accurate and should not be used as the sole basis** for determining age.
 - Factors such as genetics, oral hygiene, and overall health can all influence the eruption of wisdom teeth and may cause variations in the expected pattern.
- **Epigenetic Clock Technique:**
 - It measures **DNA methylation levels to estimate the chronological age of the subject.**
 - DNA methylation is a **process by which methyl groups are added to the DNA molecule**, typically to the promoter region of a gene, resulting in the repression of gene transcription.
 - This primarily occurs on **cytosine that precedes a guanine nucleotide (CpG sites).**
 - Cytosine is a **chemical compound that is used to make one of the**

building blocks of [DNA](#) and RNA.

- However, the use of this technique is yet to be explored by Indian forensic scientists.

▪ **Radiographic Techniques:**

- X-ray and CT scans can be used to assess the maturity of bones, as well as to look for signs of degeneration or disease.

What is the Status of Birth Registration in India?

▪ **About:**

- According to the [United Nations Children's Fund](#) report (2016), **only 72% of births of children below five years were registered in India.**
- And **out of 26 million children born every year, around 10 million went unregistered.**
 - Under [Sustainable Development Goal 16](#), providing legal identity for all, including birth registration, is a specific target.
- According to the [National Family Health Survey \(NFHS\)](#), the share of India's institutional deliveries has increased to 88.6% in 2019-21 (NFHS-5) from 40.8% in 2005-06 (NFHS-3).
 - It is surprising that even with the increase in institutional deliveries, proving age remains a contested issue in criminal trials.

▪ **Punishment due to Non-Compliance:**

- Non-registration of birth by the **'head of the house' or hospital is punishable with a fine of up to Rs.50** under the [Registration of Births and Deaths Act, 1969](#).
- The draft amendment to this Act inter alia proposes to **increase the fine up to Rs. 250 and Rs. 1,000 for an individual and institution, respectively.**
 - The objective is to obviously to persuade people to register births and deaths, and not severely punish those who do not do so.

Conclusion

- Though the introduction of better medical techniques to estimate age is welcome, it would be better if every birth is registered on the basis of hospital or any other proof so that its credibility is maintained in the court of law.
- Ultimately, a statement of fact (about the date of birth) has more evidentiary value than the estimated age based on medical opinion, which may falter at times.

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