# EDITORIAL: THE HINDU

**GENERAL STUDIES 3: SCIENCE & TECHNOLOGY** **DATE: 27.03.2025**
**TOPIC: RESEARCH**

## The issue is about the 'quality' of India's publications

### India's Ambition in Scientific Publications

- India aims to surpass the United States in scientific publications by 2029.
- Despite this goal, concerns about research quality, low investment in R&D (0.67% of GDP), and unethical practices in research persist.

### Global Research Comparison

- **Current Research Output**:
  - China leads in research publications with 8,98,949, followed by the United States with 4,57,335, and India with 2,07,390.
- **China's Success**:
  - China's research success is attributed to strategic investments in education, science, and a long-term development plan that began in 2006.
  - Significant investments in science and technology have enabled China to outpace other countries in publication output.

### Investment in Research

- **Low Investment in India**:
  - India's investment in research and development is much lower compared to other nations:
    - Israel – 6.3% of GDP
    - South Korea – 4.9% of GDP
    - Japan – 3.3% of GDP
    - United States – 3.46% of GDP
    - China – 2.4% of GDP
    - India – 0.67% of GDP

- This low investment raises concerns about India's ability to reach its goal of becoming a developed nation by 2047.

**India's Research Output in Numbers**

- **Research Publications in 2024**:
  - India's total publications in science and engineering for 2024 stood at 1,91,703. In contrast, the U.S. had 6,48,905 publications.
- **Global Ranking**:
  - India ranks 28th out of 30 countries in terms of research quality, according to Clarivate data.
- **Scientists' Global Standing**:
  - India has 5,351 scientists in the top 2% globally, but their rankings vary widely, reflecting inconsistencies in the quality of research.

**Quality vs. Quantity in Research Publications**

- **High Output Doesn't Equal High Quality**:
  - While India's publication output is significant, the quality of the research is not always up to global standards.
- **Research Impact**:
  - The true impact of research is measured by citations and its contribution to the scientific community.
  - Indian research is often published in lower-ranked journals, indicating a gap in quality compared to global benchmarks like the H-index and Impact Factor.

**Infrastructure and Institutional Support**

- **China's Research Infrastructure**:
  - China's Chinese Academy of Sciences (CAS) publishes significantly more research in high-impact journals like JACS compared to India's CSIR labs.
  - Chinese universities such as Peking University, Tsinghua, and Fudan are major contributors to research output.
- **India's Research Institutions**:
  - All IITs combined have only 68 publications in JACS, much less than a single second-tier Chinese university.

- The gap highlights the need for better research investment and support for Indian universities.

**Challenges in Indian Scientific Research**

- **Unethical Practices**:
  - India faces challenges related to unethical practices, including fraudulent publications and low-quality output.
  - A 2018 study revealed that 62% of all standalone fake journals worldwide originated from India.
  - Around 10% of India's total research output may be fake or unverified.
  - In 2019, a Hyderabad-based publishing group was fined $50 million by a U.S. court for deceptive practices, damaging India's global research reputation.

**Need for Reform in India's Research System**

- **Focus on Quality Over Quantity**:
  - India must prioritize improving the quality of research instead of focusing solely on the number of publications.
- **Invest in Education and Training**:
  - Significant investments in education, training, and the development of young scientists are necessary to foster high-quality research.
- **Ethical Research Practices**:
  - Strengthening ethical research practices and ensuring robust peer review standards will help improve the global standing of Indian research.
- **Address Systemic Issues**:
  - India must address the systemic issues in research funding, infrastructure, and academic integrity to achieve meaningful scientific progress.
- **Long-Term Strategy**:
  - Following China's example, India needs a long-term strategy to invest in university research, enhance training programs, and improve the overall research ecosystem.

**Source:** https://www.thehindu.com/opinion/lead/the-issue-is-about-the-quality-of-indias-publications/article69378556.ece