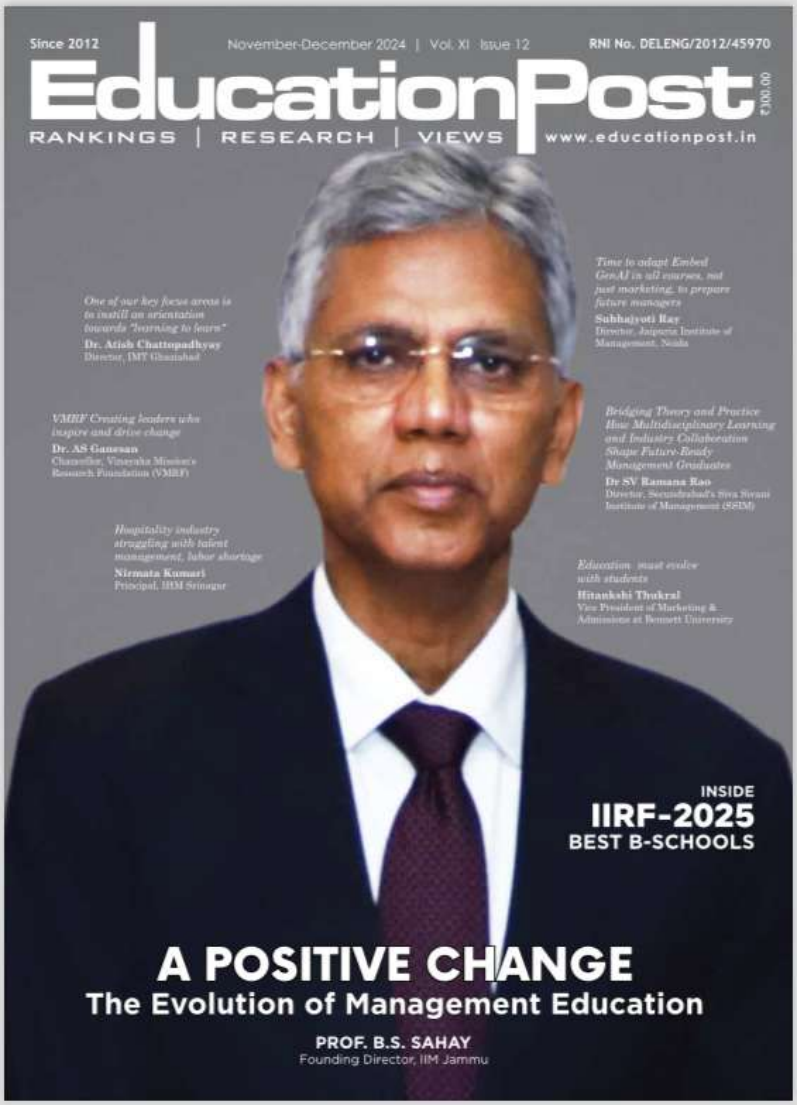
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HEALTH EDUCATION A MUST IN ALL SCHOOLS ACROSS INDIA

Dr. Rahul Mehra
Founder & Chairman
Tarang Health Alliance and India's National Representative for the UNESCO Chair for Global Health & Education

With an extraordinary career spanning over three decades, **Dr. Rahul Mehra,** Founder & Chairman of Tarang Health Alliance and India's National Representative for the UNESCO Chair for Global Health & Education, has consistently pushed the boundaries of healthcare innovation. His groundbreaking work includes the development of life-saving implantable cardiac devices like defibrillators and loop recorders, which have redefined global cardiac care.

Armed with a PhD in Biomedical Engineering from New York University and a storied tenure at Medtronic, where he earned 70 patents and published over 100 research papers, Dr. Mehra transitioned from a top-tier researcher to a public health advocate. He founded the Indian Health Alliance and later Tarang Health Alliance to promote preventive healthcare and health literacy in India. His research-driven approach aims to make health education a core component of the school curriculum.

In this interview with Education Post's Prabhav Anand, he discusses how his engineering background fuels his mission to build a healthier, better-informed future and how technology, education, and policy must converge to reshape global healthcare.

You began your career in biomedical engineering and made groundbreaking contributions to cardiac health at Medtronic, including implantable defibrillators. Could you share a pivotal moment in your career that shaped your research philosophy?

When I was a young scientist at Medtronic, I would ask why certain features existed in our devices and why they were designed in a particular manner. The answer from other scientists was that there was historic precedence to these features, and we should not change them.

I decided that I would not stop questioning until someone could explain a clear rationale for these features. Since then, my research philosophy has been based on asking the right questions and not giving up till I can get a satisfactory answer.

TARANG Health Alliance

Your work has bridged academic research and practical solutions in healthcare. How did your transition from a scientist to an Assistant Professor and later an innovator in Medtronic influence your problem-solving approach?

I was a researcher and an academic early in my career. These disciplines were synergistic. Both required cognitive skills. However, I was not satisfied with just publishing academic manuscripts. I had always been a tinkerer and an experimenter.

As a young boy, I remember experimenting with chemicals, electricity and building a model hovercraft. I wanted to turn ideas into products. This opportunity came at Medtronic. There I developed features and new products that would help people.

You have 70 patents and over 100 research papers. Among them, which innovation do you feel has had the most profound impact on public health, and why?

The first was an implantable recording device called Reveal or "loop recorder." My team and I developed the concept and the algorithms to make it functional. This device diagnoses problems of heart rhythm and why some patients faint.

Since this was a diagnostic device, initially I received a lot of opposition from my colleagues. Medtronic had never made an implantable device that did not treat a clinical problem. This was a shift in the thinking
of the company. Over the years, the company has sold over two million of these devices.

The second contribution was developing features for implantable defibrillators so that they could be made much more efficient and smaller. Implantable defibrillators revive patients from sudden cardiac death. Initially, these devices were very large, and many patients did not like them implanted in their chest.

Making them efficient and smaller increased the widespread application of these devices for prevention of sudden cardiac death. Medtronic has also sold millions of these devices worldwide.

I've seen in your research as highlighted in the Global Burden of Disease (GBD) Study 2021, systematically analyzed 288 causes of death across 204 countries from 1990 to 2021. Your study intriguingly notes that 53 causes of death have become geographically concentrated since 1990, a rise from 44. Among these, neonatal disorders stand out as heavily localized issues. In your view, is this concentration a result of systemic healthcare failures, or are there deeper socio-economic factors at play?

It is a systemic healthcare failure with greater impact on lower socio-economic section of the society.

There are two factors responsible for this:

a) A significant proportion of this socio-economic section is not literate and even if they are literate, they lack health education. Increasing literacy and providing health education in schools is the long-term solution to this issue. Healthy lifestyle habits relating to physical, mental and social health should be taught in all schools. Health education should focus not only on imparting health knowledge but also on improving health behavior.

b) They need high quality healthcare facilities close to their residence. Most government hospitals do not provide quality healthcare. The government needs to increase expenditure and provide high quality healthcare facilities. Successful interventions can be found within India. Kerala has addressed these issues over the long term.

Despite global reductions in life expectancy during the pandemic, Southeast Asia saw a minimal decline of 0.4 years, compared to

3.6 years in Latin America. What specific public health strategies, cultural factors, or systemic preparedness measures do you think insulated Southeast Asia? Could these approaches serve as a model for other regions, particularly in building resilience against future pandemics?

The primary reason for the large reduction in life expectancy in Latin America was the demographics of the population. A much higher proportion of the Latin American population is older, whereas India has a very young population. Adults that are older tend to have more comorbidities than younger adults.

Comorbidities such as hypertension, heart disease, diabetes, kidney disease; were a significant risk factor for death during Covid 19. Resilience against future pandemics can be built by teaching children and adults about good hygienic practices as well as preventing comorbidities by leading a healthy lifestyle.

As India's National Representative for the UNESCO Chair for Global Health & Education, how do you align your work with UNESCO's mission to promote health equity and education globally, especially in under-resourced communities?

The mission of UNESCO's Chair for Global Health & Education, is to promote health across the globe by educating communities on how to prevent diseases and injuries. Its members produce and share knowledge. This is completely aligned with the goal of our NGO (Tarang Health Alliance) to implement and advocate for health education in all schools across India.

Your contributions to atrial fibrillation treatment devices were revolutionary. How do you see the field of cardiac health evolving in the next decade, and where do you envision your research playing a role?

The field of cardiac health is evolving with better diagnosis and treatment. Early diagnosis will occur increasingly with external and implanted devices. Early diagnosis will provide an opportunity for people to change their lifestyle habits before it is too late. Cardiac treatment will slowly shift to non-pharmacologic therapies because presently available drugs have significant side effects.

As someone who has lived and worked in both India and the USA, how do you think the healthcare systems of these two nations can learn from each other?

Both systems are partially broken because the focus is primarily on treating diseases and injuries; not on preventing them. We need to educate the population on how to prevent diseases and provide appropriate incentives. This should happen in schools and at worksites. In USA, most schools provide health education through certified teachers and many worksites have wellness programs.

The economic necessity to prevent diseases is much greater in India as many people go into bankruptcy after undergoing a serious illness. Although Ayushman Bharat provides a basic insurance coverage, quite often it is not enough to cover serious illness.

The COVID-19 pandemic reshaped global health priorities. Based on your experience, what systemic changes do you believe are necessary to make health education and preventive healthcare more resilient in the face of such challenges?

We need several systemic changes. Firstly, health education should be taught at every grade level and in every school. As children's brains are still developing, they are more likely to adopt healthy lifestyle habits. This should be the key component of a comprehensive school health program in every school. To implement this, we need to develop a cadre of trained and certified health educators for schools.

Secondly, preventative healthcare should be part of every physician and nurse's training in their college. Thirdly, to incentivize the population to know their health metrics and act early, the government should provide free health checkups to everyone once a year. This should be part the Central or State budget. Finally, health insurance companies should reduce their premiums for individuals who have healthy biometrics. This will incentivize and motivate people to be healthy because they could save money on their health premiums.