

# Opinion: Bengaluru Reads Your X-Ray. Chennai May Train Your Doctor

## New Delhi:

"Prick the patient's index finger," said the voice in my ear. As the lancet in my hand was about to make contact with flesh, it cautioned me: "Avoid pricking the pad of the finger because it contains more nerve endings which will be more painful."

Using Meta Platforms Inc.'s Quest 2 headset, I was conducting the first nursing procedure of my life in a highly authentic virtual-reality setting, complete with gloves, cotton swabs, disposal bins and, yes, a patient waiting for me to draw blood to check its glucose level. The VR training program, which helped even a novice like me get it right the first time, has been designed by young techno-entrepreneurs from Chennai, in India's south.

Their firm is one of the 200-plus startups incubated by the city's Indian Institute of Technology Research Park, a venture supported by the government but funded by alumni and companies. The five-year-old MediSim VR has moved beyond the hatching phase: With 2,000 students training currently in the labs it has set up in medical and nursing schools, it's emerging as a serious player.

Recently, MediSim VR roped in Harvard Medical School's simulation guru Gianluca De Novi as an adviser, and tied up with Hartford HealthCare Corp.'s Center for Education, Simulation and Innovation, or CESI. The goal is to crack large and lucrative medical education markets like the US, UK and Australia.

India's capabilities in software are entering a new phase. The industry that came into its own at the turn of the millennium - initially to help fix the Y2K bug - has remained fixated on providing outsourced services at a fraction of code-writing cost in the West. Yet that prowess in labor arbitrage has failed to reach the next level of sophistication. With some exceptions, such as the privately held Vembu Technologies' disaster-recovery suite, the country is yet to spawn well-known successes in software products.

Expect this to change. While many Indians write code for Silicon Valley firms, some, like Sundar Pichai of Alphabet Inc. and Satya Nadella of Microsoft Corp., run global tech behemoths. That is now kindling a desire among entrepreneurs to create niche software products at home and take them global - as on-demand services on the cloud. After all, if X-ray plates from the West can be read in Bengaluru, why can't future doctors in advanced nations learn how to conduct a surgery on a virtual training module written thousands of miles away in Chennai?

Mannequins, on which medical and nursing students traditionally learn their craft, are often inadequate for a large class, need intensive - and expensive - instructor resources, and yet their impact on learning is hard to assess. Virtual reality solves these problems. It also gives health-care professionals a better understanding of what to expect in the real world. Sharmila Anand, a doctor and educator advising MediSim VR's cofounders, told me that the first time she encountered Code Blue - hospital shorthand for when an adult is having a medical emergency such as cardiac or respiratory arrest - was on a live patient.

It doesn't have to be like this. MediSim VR cofounder and Chief Technology Officer Jenio Manickam Durairaj comes from the world of computer games, while Sabarish Chandrasekaran, the chief

executive officer, is an engineer and MBA. They were dabbling in outsourced virtual-reality-based solutions for everything from new tractor models to upcoming real estate projects when they decided that rather than end up as a software services firm, they should build a product. When Adith Chinnaswami, a trained laparoscopic surgeon, came on board, the founders knew that their specialization was going to be medical education.

Initially, they focused on surgical procedures, but soon realized that training hospital staff in everything that goes on inside or outside the operating theater is an even bigger market. That's when they landed at the Healthcare Technology Innovation Center at IIT Madras. (The prestigious engineering college still uses the old name for Chennai.)

Medical schools are receptive to the idea because they simply host the VR labs free of charge. MediSim bills Indian students an affordable annual license fee of about \$300 to use its stations that cost \$12,000 apiece to build. I spoke to Sivasri and Tamilselvi, third-year students at Puducherry Medical College. In addition to mannequin-based practice, their institution already allots time for VR lab. Now they want more virtual-reality-based training modules and more testing to check their proficiency. MediSim VR has three patents in medical simulation. Once it's able to include haptic feedback - where students will get a sensory reaction from the patient's body during simulated surgery - learning outcomes will improve further, Chinnaswami told me.

Before going global, India's services outsourcing business cut its teeth on massive domestic projects such as computerization of the railway ticketing system. Product companies might follow the same route. Since the pandemic, the Indian government has become painfully aware that the country's health-care resources need an upgrade, both quantitative and qualitative. The more affluent

southern region is doing relatively better, but access to quality health care in smaller cities in north India is almost non-existent. Firms like MediSim are crucial to integrate VR-based medical learning into the core curriculum.

Globally, VR-based health-care training is a \$3.8 billion-a-year industry. "It's just the tip of the iceberg," says MediSim VR's CEO Chandrasekaran, who expects the market to grow eightfold by 2030. The market leader is San Francisco-based Osso VR.

Every seventh doctor in the US is of Indian origin. Nurses from Kerala have a long tradition of tending to patients in hospitals around the world, especially in the Persian Gulf. Now it's the turn of Indian-made medical software to go global, armed with training data on thousands of students in the home market. Indian medical education follows the UK system, but adjusting training modules to American standards won't be too hard. The catheter is the same everywhere, even though what's known as urobag in India is called a closed-circuit bag in America. That's hardly a bridge too far.