

News and Perspectives

# From Simulations to AI: Samir Grover on How Tech Can Enhance Medical Education

Simon Spichak, JMIR Correspondent

## Abstract

From simulations to virtual reality to AI, technology is increasingly used to bridge gaps in medical education. In this *News and Perspectives* article, JMIR Correspondent Simon Spichak interviews gastroenterologist and renowned gastroenterology educator Samir Grover, MD, about his perspectives on tech in medical education.

**Key Takeaways:**

- Drawing on simulations for pilots, Grover started his career implementing similar tools to help medical trainees improve their endoscopy skills.
- As more AI enters the medical realm, it's crucial to study human-AI interaction in the context of medical education.

*The interview has been shortened and edited for concision.*

Throughout his career, Scarborough Health Network gastroenterologist and advanced endoscopist Samir Grover, MD, has sought to improve medical education with technology. His early studies tested [simulations and virtual reality](#) to enhance endoscopy training. In recent years, his work has expanded to studying AI-human interaction.

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*Trying to meld those two worlds together, where we're able to provide good quality technological solutions to educational gaps, was what really inspired me.*

Samir Grover, MD

In his role as executive vice president of academics for the Scarborough Health Network, Grover oversees medical education at the new Scarborough Academy of Medicine and Integrated Health at the University of Toronto Scarborough Campus.

In a full-circle moment, having volunteered to assist in one of his studies a decade ago, I spoke with Grover to learn about how technology can improve medical training.

*What got you interested in medical education and simulations?*

**SG:** It all started when I was a trainee and [did] my first endoscopic procedure. The procedure that we do commonly is called gastrointestinal endoscopy, where we use [flexo](#)

[cameras to evaluate the gastrointestinal tract](#). Only in the last two years do we have to learn this endoscopic procedure, which for a lot of gastroenterologists, is the bulk of what they do on a day-to-day basis.

The first time I touched the instrument, I was expected to do the procedure and to complete it entirely. There were time pressures. It was a complicated case. And I had never touched the instrument before and just seen videos and textbooks on how to do it. It was risky to the patient. It was a terrible learning environment for me, and it made me realize there must be a better way to do this.

At the same time, aviation had really done a lot with respect to flight simulators. I looked at the simulators; they looked like video games. The same companies that were making flight simulators were in the medical space also. What we didn't know was whether this was actually as usable in our space as it was in aviation.

I wanted to demonstrate that endoscopic virtual reality simulation made a difference in terms of clinical outcomes. We saw that in the novice population of learners, the impact was significant not just on technical skills but also on the nontechnical skills, which are just as, if not more, important.

*Can you tell us about some of the work that you're doing now with trainees and with AI?*

**SG:** We are looking at the use of AI in various settings and environments, and how to augment the educational process.

The first decision to support AI products that came out in the GI [gastrointestinal] space was an automatic detector that puts bounding boxes around polyps [highlighting visually where abnormal growths might be]. As a consequence, you don't need to be looking as heavily and cognitively for the polyps. This technology is called [CADE](#). How learners will interact with technologies like CADE is still sort of in flux.

There's been some studies on it already, but the question becomes whether learners who enter into an environment where CAdE is present will never learn the skill of how to detect polyps because they've learned the entire time with these boxes coming around them.

Understanding the [interplay](#) of these technologies is a core part of what we do as a lab.

*Where does generative AI come into the picture?*

**SG:** There's no reason why we can't have ambient assessment in clinics. We already have microphones there for AI scribes. We should be using that same data for the purposes of providing feedback to learners.

That's a data stream that we are using in order to obtain information that can be put into vision language models to determine [what feedback to give to learners about] the physical space and interactions [with patients]—for example, whether learners are too close to patients, whether they're looking [at] the computer too much as opposed to creating a good relationship with the person they're talking to.

All of these are things that we're addressing, leveraging generative AI in ambulatory settings through...existing infrastructure.

*I'm curious over your career whether there's been instances where adding tech to medical education hasn't worked out in the way you anticipated.*

**SG:** We come up with lots of ideas and we test them, and the experiments are negative. I wish that there was more of a culture of publishing negative findings because I think that's just as important.

We applied principles of gamification into endoscopic simulation-based training and did a study where we used a gamified course curriculum and compared it to a typical simulation curriculum to see whether there was improved skill acquisition, nontechnical skill acquisition, and trainee confidence, appreciation, and satisfaction in terms of the education, and it was a negative study.

You would have thought that gamifying a simulation curriculum would have made more of a difference, but it didn't. That surprised me. But it still showed me that, you know, we have to test these things.

*How different are the limitations and pushback for generative AI compared to other technology like simulations?*

**SG:** I don't think it's a stretch to say that there's a more significant fear of artificial intelligence than there is for other technologies. I think it is critical to be able to safely use AI and to allay the concerns that individuals have with respect to the use of this tremendous technology.

**Keywords:** medical education; simulation training; virtual reality; artificial intelligence; gastroenterology; endoscopy; clinical competence; human-computer interaction

*How do you handle medical residents that want to abstain from using generative AI due to ecological or accuracy concerns?*

**SG:** We have had examples of students who have not wanted to be using AI tools, but to be honest, there's so few AI tools that have entered into clinical practice that it hasn't become a major issue as of now.

It will become an issue, and it is something that we will have to address through some sort of a framework. I think having open and transparent rules, particularly with respect to the safe use of AI, that are codified at both the health care institution and the academic institution is critical towards addressing a lot of those concerns.

*How involved do the clinicians and the educators still need to be even when they're using some of these tools to enhance their teaching?*

**SG:** There has to be an overarching framework based on the understanding that people are using these technologies for the first time. The safety structures that exist and the risk paradigms that exist as a consequence need to be understood a priori.

The people that are using the AI for the first time but already know the skill already have different risks than people who are using the AI for the first time but are AI-savvy and learning the skill for the first time. All of that needs to be put inside governance frameworks.

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Samir Grover, MD

The big thing that we've learned is teaching our teachers how to use AI with learners is a separate group of skills from learning how to use AI. Upskilling with respect to that is critical in order to have teachers that not only can teach around the clinical aspects and around the AI, but can also teach how to appropriately use the AI in certain settings.

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