

Bringing telemedicine to sleep apnea patients

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Sleep apnea is an underdiagnosed and undertreated condition, but as awareness and demand for care increase, University at Buffalo School of Management researchers have helped create a new set of digital tools to serve the growing number of patients.

Published in *JMIR Formative Research*, the telemedicine platform is made up of four parts: a [mobile app](#) for patients, a web app for providers, a dashboard for reporting and an artificial intelligence-based chatbot for customer onboarding and support.

"It's challenging to diagnose and treat sleep apnea patients because of the limited number of clinics and a shortage of specialists to deliver these services," says the study's lead author Pavankumar Mulgund, Ph.D., clinical assistant professor of management science and systems in the UB School of Management. "There's also inequitable distribution because most specialists are in [urban areas](#), so there's a need to explore other approaches to serving these patients, such as telemedicine."

Sleep apnea is a chronic condition where patients involuntarily stop breathing while they are asleep. The most common treatment is a [continuous positive airway pressure](#) (CPAP) machine, but other options may be prescribed for patients who do not respond to CPAP.

To develop their telemedicine platform, the researchers conducted interviews with six subject matter experts and led two brainstorming workshops to determine requirements. After that, they ran three design and architectural review sessions to define and evaluate the system. They also conducted 14 usability assessments to improve the system's user interface, and three engineers performed comprehensive testing.

The researchers identified four key guidelines for successfully developing digital health products:

- Learn from a diverse set of end-user perspectives
- Weed out irrelevant features early and understand potential problems before building the final product
- Leverage existing tools and software to reduce development time for a minimal up-front investment

- Be mindful of the shortage of software developers, which can create a significant bottleneck

"With an [aging population](#) and the escalating cost of care, telemedicine alternatives have become increasingly imperative," says co-author Raj Sharman, Ph.D., professor of management science and systems.

"Platforms like the one we developed can break access barriers while ensuring access to high-quality care, especially for the 22 million Americans affected by obstructive [sleep apnea](#)."

More information: Pavankumar Mulgund et al, Design, Development, and Evaluation of a Telemedicine Platform for Patients With Sleep Apnea (Ognomy): Design Science Research Approach, *JMIR Formative Research* (2021). [DOI: 10.2196/26059](https://doi.org/10.2196/26059)

Provided by University at Buffalo

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