Study looks at impact of artificial intelligence on primary health care

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Whether we're ready or not, artificial intelligence (AI) already plays a role in many health care settings. However, cautiously developing,

deploying and even defining further AI advancements will determine its impact and efficacy in the years ahead, according to a new University of Western Ontario study.

Interdisciplinary researchers from family medicine, computer science and epidemiology have identified key issues regarding the use of AI tools in primary health care by connecting directly with family physicians, nurses, nurse practitioners and digital health stakeholders.

Overwhelmingly, the responses show AI could have a positive impact in clinical practice, but many factors must be considered regarding its implementation.

"We are ready for AI, but we must be thoughtful about how and when we use it," said Dan Lizotte, an associate professor in computer science and the Schulich School of Medicine & Dentistry and senior author on the study. "So let me amend and say, 'I think we're ready to start the process of successful implementation.'"

AI and machine learning (a subfield of AI where patterns are learned from data) encompass a variety of techniques loosely focused on computers performing human-like "intelligent" tasks. AI methods are already used in applications ranging from advanced web search engines (Google) and recommendation systems (Netflix, Amazon) to understanding human speech (Siri and Alexa) and self-driving cars (Tesla). In primary health care settings, AI could be used for predicting patient outcomes based on anonymous electronic medical record (EMR) data or forecasting trends and identifying patterns too complex for humans to discern (e.g., infectious disease outbreaks in a community.)

For this study, former graduate student Jaky Kueper, Lizotte and co-principal investigator Amanda Terry conducted 14 in-depth interviews with primary health care and digital health stakeholders in Ontario.

Kueper, now a TechForward Fellow in AI at The College of Family Physicians of Canada, is the first-ever Western student to complete a combined Ph.D. in epidemiology and computer science.

In the interviews, there was general positivity about the introduction of AI in primary health care settings, but there were also several apprehensions, including cost and availability of new technology, privacy concerns, threats to clinical skills and capacity, loss of human control over decision making, and broader ethical, legal and social implications.

"There's a readiness in terms of people looking for solutions using technology including AI that can help support primary health care practitioners, but there are a lot of things that need to be in place first, in terms of transparency, assurances of privacy and cost," said Terry, director of the Center for Studies in Family Medicine at Schulich Medicine and Dentistry.

When considering the use of AI in primary health care settings, the practitioners need to be comfortable with the implementation and application but so do the patients.

Lizotte said the introduction of AI triggers as many questions as answers for doctors, nurses, and nurse practitioners but that's an important step to consider as the digitization of health care is here to stay.

"Is AI going to enhance the things I care about doing in my practice? Or is it going to supplant them in a way that's not going to be good for me and not going to be good for my patients? These are the questions on everyone's mind," said Lizotte. "I think overall there is cautious optimism about AI implementation, but the key word is cautious."

The study appears in *BMC Medical Informatics and Decision Making*.

More information: Amanda L. Terry et al, Is primary health care ready for artificial intelligence? What do primary health care stakeholders say?, *BMC Medical Informatics and Decision Making* (2022).

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