Optimizing PharmD Education: Quantifying Curriculum Complexity to Address Student Burnout and Cognitive Overload

Authors : Frank Fan

Abstract : PharmD (Doctor of Pharmacy) education has confronted an increasing challenge — curricular overload, a phenomenon resulting from the expansion of curricular requirements, as PharmD education strives to produce graduates who are practice-ready. The aftermath of the global pandemic has amplified the need for healthcare professionals, leading to a growing trend of assigning more responsibilities to them to address the global healthcare shortage. For instance, the pharmacist's role has expanded to include not only compounding and distributing medication but also providing clinical services, including minor ailments management, patient counselling and vaccination. Consequently, PharmD programs have responded by continually expanding their curricula adding more requirements. While these changes aim to enhance the education and training of future professionals, they have also led to unintended consequences, including curricular overload, student burnout, and a potential decrease in program quality. To address the issue and ensure program quality, there is a growing need for evidence-based curriculum reforms. My research seeks to integrate Cognitive Load Theory, emerging machine learning algorithms within artificial intelligence (AI), and statistical approaches to develop a quantitative framework for optimizing curriculum design within the PharmD program at the University of Toronto, the largest PharmD program within Canada, to provide quantification and measurement of issues that currently are only discussed in terms of anecdote rather than data. This research will serve as a guide for curriculum planners, administrators, and educators, aiding in the comprehension of how the pharmacy degree program compares to others within and beyond the field of pharmacy. It will also shed light on opportunities to reduce the curricular load while maintaining its quality and rigor. Given that pharmacists constitute the third-largest healthcare workforce, their education shares similarities and challenges with other health education programs. Therefore, my evidence-based, data-driven curriculum analysis framework holds significant potential for training programs in other healthcare professions, including medicine, nursing, and physiotherapy.