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Using public health systems models to embed systems thinking in teaching curricula: A demonstration

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CONTEXT

In Australia, especially over the past three years, there is an increased adoption of systems methods and tools by policy makers in the health and social wellbeing sectors. While there's a growing application of qualitative and conceptual systems thinking methods, as well as quantified system dynamic and agent-based epidemiological models, the use of these tools in applied health policy settings outpaces their application and understanding in other sectors. This is also seen in the education sector, specifically within post-graduate public policy and public health programs, where the disseminating of the applications of systems thinking and system dynamics remains underutilised.

PURPOSE

This study aimed to familiarise Masters' students, already previously grounded in population health and epidemiologic methods but not exposed to systems thinking approaches, to address population health issues and plan population health strategies using an online problem-based system dynamics learning tool.

APPROACH

A simplified learning model was developed based on an existing osteoporosis model to demonstrate the benefits of applying system dynamics models to classic and well-known public health or health systems challenges, such as capacity constraints and the prevention paradox. Utilising Stella Architect™, the system dynamics model demonstrates the prevalence of osteopenia and progression to osteoporosis in an aging Australian population. The model further demonstrates the impact of intervening at a 'primary prevention' level with an exercise program for the whole-of-population and the 'secondary prevention' level with medications targeting only the population with osteoporosis.

RESULTS

This interactive teaching module underwent beta testing, during which graduate students provided feedback on the interface's usability. The beta testers provided positive feedback, with the main suggestions for improvement focusing on font size for some of the text. Preliminary findings from the osteoporosis model demonstrate the potential for applying system dynamics in public health policy, providing valuable insights for both educators and practitioners.

CONCLUSIONS

The development of an online system dynamics learning tool represents a significant step in bridging the gap between systems thinking and public health education. Our ongoing efforts involve testing its usability with higher degree students, incorporating feedback, and subsequently disseminating it to a broader audience of public health students and practitioners.

KEYWORDS

public health training, prevention paradox, archetypes