Presentation Title: Human expert versus computer: How do they compare when screening abstracts for a knowledge synthesis project?

Background
Knowledge synthesis (KS) is research that entails the extraction of information from the literature to answer a question. KS is informative but often time and labor-intensive for reasons including the high volume of citations captured and abstracts requiring manual review. Automated screening tools are language-processing software that automate the review process and have the potential to expedite KS. Our objectives were to 1) develop an algorithm for screening abstracts, and 2) test its performance to determine feasibility.

Methods
We coded a screening program (SP) using simple keyword search strategy in Python 3.6. The SP was created based on a priori KS review criteria for a project in the field of swallowing disorders. We tested performance of the SP by comparing its results to that of the reviewer through quantitative and qualitative analyses.

Results
In quantitative analysis, the SP achieved 35% precision, 94% sensitivity, and 54% workload saving. In qualitative analysis, the discrepancies between the SP and the human results were reviewed. The most common error in the SP was misinterpretation of the context of the keyword, lacking the ability to infer as humans can.

Conclusion
The strategy of keyword screening is feasible given the adequate performance, however there were fundamental differences between the SP and human reviewers. While our SP may not replace human reviewers at the abstract stage, this approach could be used as a preliminary filter to reduce the number of abstracts reviewed. This has the potential to increase productivity and project costs.

Themes:
Check (highlight) the most applicable theme according to the abstract.

| [ ] Innovation and Technology | Health and Wellness | Culture and Society | Sustainability and Conservation |

Comments: