MSR70

Acceptance of Artificial Intelligence Augmented Systematic Review by HTA bodies

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Introduction

- Health Technology Assessment (HTA) bodies evaluate new health technologies to determine their safety, effectiveness, and economic value. This involves comparing the new technology with existing alternatives to see if it works similarly, better, or worse. Essential evidence for HTA is typically generated through systematic reviews, which remain the cornerstone of evidence-based medicine.
- Systematic reviews synthesize the best available research to inform clinical and public policy decisions, and numerous strategies are employed to limit bias and random errors. One effective strategy is to involve two reviewers at various stages of the process. However, this approach can be time-consuming and resource-intensive, especially when working within specific timelines.
- Artificial intelligence has the potential to speed up systematic reviews and reduce the burden on human reviewers in such situations.

Objective

We reviewed the use of AI and its acceptance by various HTA bodies by examining its guidelines. We also worked to identify the key areas where AI was explored for submissions.

Challenges in conducting systematic review

Data Overload - Traditional reviews often struggle to manage the overwhelming amount of data available

Time consuming process - Conducting traditional systematic reviews can be labor-intensive and time-consuming

Limited scalability - Traditional methods may face limitations in analyzing large volumes of data efficiently

Methods

- We reviewed the list of HTA bodies by conducting an environmental scan to identify the list of HTA bodies. We obtained the list of national and regional HTA bodies by referring to "'INAHTA'—a network that connects HTA agencies," "'EunetHTA'—a network for HTA across Europe," and "AdHopHTA_toolkit_tol24—the list of HTA agencies".
- We then retrieved the names of different HTA agencies across different countries and duplicates were removed. The retrieved list of HTA bodies were tabulated.
- We visited the retrieved HTA bodies/agencies official web portals and reviewed their specific methodological guidelines on systematic reviews or evidence synthesis for HTA submissions. We screened for information regarding artificial intelligence or machine learning, focusing on its use in systematic reviews and its acceptance in their site or guidelines. Any information regarding this was captured and synthesized.

Results

Country	HTA Agency	Acceptance of AI	Reason for acceptance	Recommendations
United Kingdom	NICE	Yes	To enhance the efficiency of screening	Screening
Ireland	NCPE	Yes	Suggested the possibility of use of AI	Clinical effectiveness review
Germany	IQWiG	Yes	Classifiers in limiting the search	Literature search
Europe	EUnetHTA	Yes	Classifiers in limiting the search	Literature search
Scotland	SMC	Yes	Refers to the NICE guidelines	Priority screening

Table 1 List of HTA agencies accepting AI

- Fifty-nine HTA bodies from different countries were retrieved.
- We reviewed the guideline sections of those HTA bodies to understand the acceptance of AI/ML.
- Most of the HTA bodies from different countries did not provide clear information/recommendations about the usage of AI in SLR.
- Only four HTA bodies and a network of HTAs provided some recommendations on the use of AI in performing systematic reviews. (Table 1)

❑ National Institute for Health and Care Excellence's (NICE) of UK suggested that AI/ML can be used in the screening of literature. It has recommended priority screening techniques using AI to increase screening efficiency.

Results (cont'd)

❑ National Center for Pharmacoeconomics (NCPE) of Ireland, stated the possibility of AI/ML use in Health Research Board-Collaboration in Ireland for Clinical Effectiveness Reviews, but no information was provided in the methodological guidance.

❑ Institute for Quality and Efficiency in Healthcare (IQWiG) of Germany recommends search algorithms for systematic literature reviews of clinical evidence can make use of verified classifiers based on machine learning.

❑ Scottish Medicine Consortium (SMC) of Scottland recommends to refer to the NICE guidelines for evidence generation.

❑ European Network for Health Technology Assessment (EUnetHTA) suggest the acceptance of AI/Machine Learning based classifiers for limiting literature search.

Discussion

- Our review on the use of artificial intelligence found that most of the HTA bodies do not provide clear information or recommendation on the use of AI in systematic reviews and very few HTA bodies acknowledge the use of AI in the process of conducting systematic reviews.
- There are many options to explore the use of artificial intelligence and machine learning available for the various steps in conducting systematic reviews.
- Specifically NICE has some information regarding AI use in systematic reviews which most HTA bodies lack.
- More information on the use of AI in systematic reviews used for HTA submissions which can save time and resources need to be available.

Conclusion

- Continuous Evolution - The application of AI techniques to automate the SLR process is still a young discipline that is expected to continue to grow in the next few years.
- Guidelines and recommendations - Currently, there are very few guidelines and recommendations available on the use and acceptance of AI among HTA bodies. There is growing interest to analyze AI techniques currently proposed to address the different SLR tasks, with special emphasis on their purpose, inputs and outputs, and human intervention, if any.
- Integration with HTA - HTA agencies should consider incorporating these strategies in their guidelines for systematic review methodologies to leverage the benefits of AI in evidence-based decision making.

References

1. AdHopHTA partners (2015). The AdHopHTA toolkit: a toolkit for hospital-based Health Technology Assessment (HB-HTA); Public deliverable, The AdHopHTA Project (FP7/2007-13 grant agreement nr 305018). Web site: http://www.adhophta.eu/toolkit
2. INHTA (2023). INAHTA Members List - INAHTA. Retrieved from INAHTA. Web site: https://www.inahta.org/members/members_list/
3. NICE (2023). Developing NICE guidelines: the manual. Process and methods [PMG20]. Last updated 02 August 2023)
4. NCPE (2022). Update processes for guidelines – Systematic review (CICER: Collaboration in Ireland for Clinical Effectiveness Reviews). Last updated February 2022
5. IQWiG (2022). General Methods (Version 6.1). Last updated January 2022
6. SMC (2023). Policies & publications. SMC guides and reports. Last updated 2023

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