MSR69

Emerging Trends in AI applications: Shaping Pharmacoepidemiology and Health Technology Assessments

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INTRODUCTION

- Artificial intelligence (AI) enables automated data processing, pattern recognition, and prediction, supporting faster and more accurate analysis of large data sets.
- The growing complexity and volume of healthcare data have stimulated interest in the use of AI to enhance the efficiency and scalability of research in pharmacoepidemiology (PE) and health technology assessment (HTA).
- Large language models such as Chat Generative Pre-trained Transformer (ChatGPT) offer new capabilities for summarizing evidence, extracting key information, and improving communication between researchers and decision-makers.

OBJECTIVE

This descriptive study aimed to characterize and assess trends in the utilization of AI across studies presented at leading pharmacoepidemiology and health technology assessment conferences following the public release of ChatGPT on November 30, 2022.

METHODS

- A systematic approach was employed to identify all conference proceedings that referenced AI-related terms, including “artificial intelligence,” “machine learning,” “large language model,” “natural language processing,” “ChatGPT,” amongst others.
- The analysis included studies at meetings of the International Society for Pharmacoeconomics and Outcomes Research (ISPOR) and the International Society for Pharmacoepidemiology (ISPE), encompassing annual meetings, mid-year events, and regional conferences held between January 1, 2020, and December 6, 2024.
- For each relevant study, data extracted included the conference name and year, investigator type, research domain, type of research activity, and the specific AI technique or large language model referenced.
- The total number of abstracts referencing the use of AI was stratified by year, conference, type of sponsor and type of research.

RESULTS

- Of the 28,184 abstracts presented at ISPOR and ISPE conferences during the search period, 1,153 eligible proceedings reporting on AI use were identified.
- Across all conferences from 2020 to 2024, there was a consistent increase in the number of studies utilizing AI, with ISPOR exhibiting both the highest number of studies (n= 900) and the steepest growth in AI adoption compared to ISPE (n=253).
- Most of these studies were conducted by **contract research organizations** (44%), followed by **academic groups** (40%), and the **pharmaceutical industry** (16%).
- AI tools and LLMs were predominantly used to **semi- or fully automate literature reviews** (89%), followed by **economic modeling** (9%).

Fig 1. Total number of abstracts presented at ICPE and ISPOR (2020–2024)

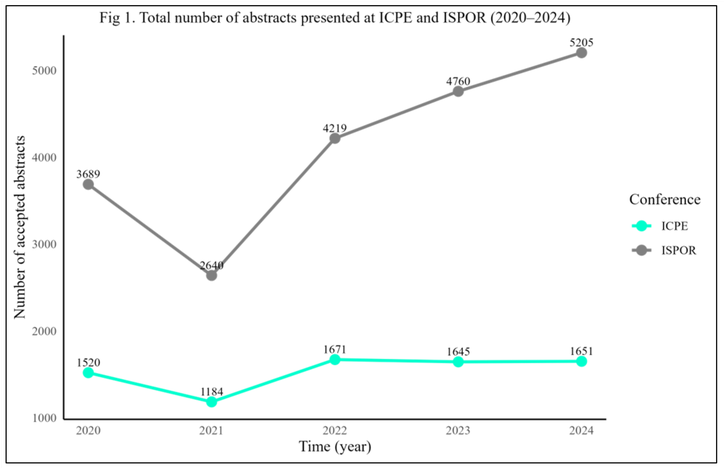


Fig 2. Proportion of studies reporting on available AI tools/LLMs use for literature reviews and other purposes over time by conference

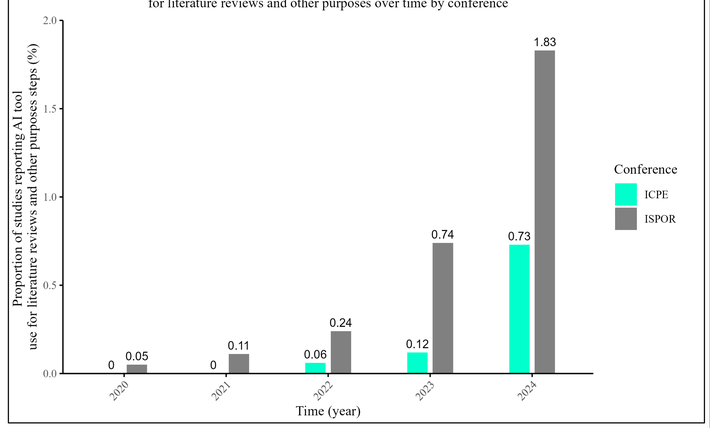


Fig 3. Number of studies reporting on AI use over time by conference

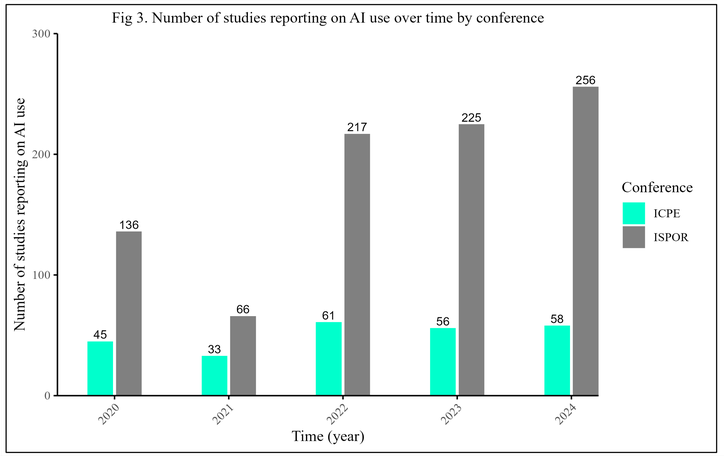
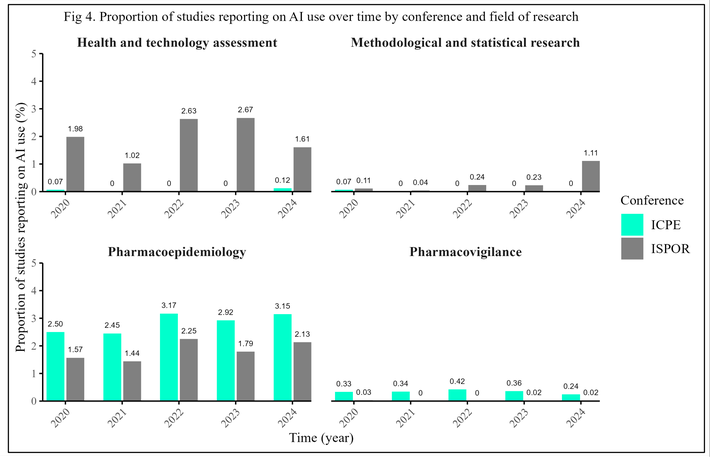


Fig 4. Proportion of studies reporting on AI use over time by conference and field of research



CONCLUSION

ISPOR conferences demonstrated the highest engagement with AI-driven studies, suggesting a growing interest in integrating AI into health economics and outcomes research. The predominance of AI in literature reviews underscores its role in enhancing research efficiency. In HTA, AI enhances efficiency through faster evidence synthesis, adaptive economic modeling, and improved horizon scanning.

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