

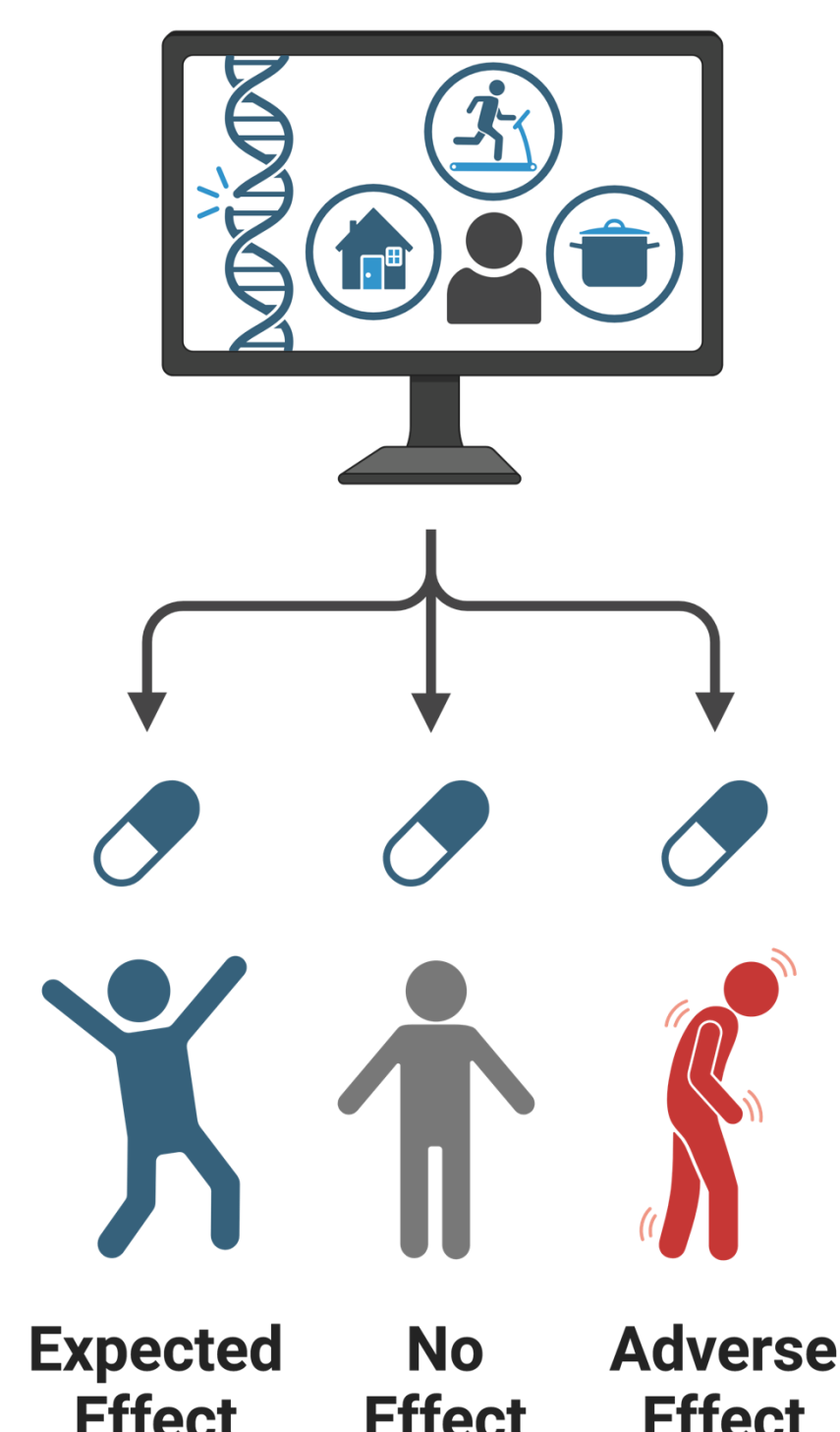
HARNESSING OPENAI AS A STRATEGIC TOOL FOR HORIZON SCANNING IN HOSPITAL PHARMACY PRACTICE

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INTRODUCTION

Artificial intelligence (AI) is revolutionizing the world, and pharmacy is no exception. AI can be a valuable tool in the field of hospital pharmacy, especially in Horizon Scanning tasks, which involve identifying and evaluating emerging trends, technologies, and therapies that may impact patient care and pharmaceutical practice. OpenAI, a powerful AI platform, offers an innovative approach in the field of Horizon Scanning, leveraging natural language processing and machine learning algorithms to analyze large amounts of data from diverse sources.



OBJECTIVES

This study explores the potential use of OpenAI as a support tool for Horizon Scanning in hospital pharmacy practice, evaluating the feasibility, efficacy, accuracy, and reliability of its use in identifying and analyzing emerging trends and technologies relevant to pharmaceutical practice, as well as its impact on decision-making and strategic planning.

METHODOLOGY

Up to **five directed searches** were conducted to compare three OpenAI models in determining the viability of authorizing the use of drugs in clinical trials in the near future.



1. Search and analysis **parameters were delimited** (clinical trials), **indicating the variables to be studied** (drugs under study) **and the type of estimation** (percentage of success of authorization). OpenAI's natural language processing capabilities were used to analyze and extract relevant information (www.clinicaltrials.gov).

Search **parameters were narrowed based on the results of the first query** (disease group, drugs). In addition to the above, an indirect comparison between each of the drugs aggregated by pathology was requested.

2. In addition to the above, the search was **restricted to a specific area (rare diseases)**.

In addition to the above, the latest Horizon Scanning report on **orphan drugs prepared by a National Pharmacy Society group**, which identifies new orphan drugs, was provided.

3. Based on the above, a statistical estimation of the **viability, efficacy, accuracy, and reliability of the drugs** in this field was requested.

CONCLUSIONS

OpenAI could be a valuable Horizon Scanning tool in hospital pharmacy practice, offering the potential to improve the identification of emerging trends and technologies relevant to patient care. However, today they present significant limitations that require further development to ensure their reliability and accuracy in complex tasks. It is crucial to address current deficiencies, such as the lack of capacity to offer accurate statistical comparisons and reliable probabilistic estimates, as well as the occasional tendency to provide incorrect information.

RESULTS

The results indicate that the three OpenAI models reached a common conclusion about the **areas where new drugs are most likely to emerge in the near future**: chronic diseases (cancer, autoimmune diseases, neurodegenerative diseases, and cardiovascular diseases), weight control, and rare and genetic-based diseases.

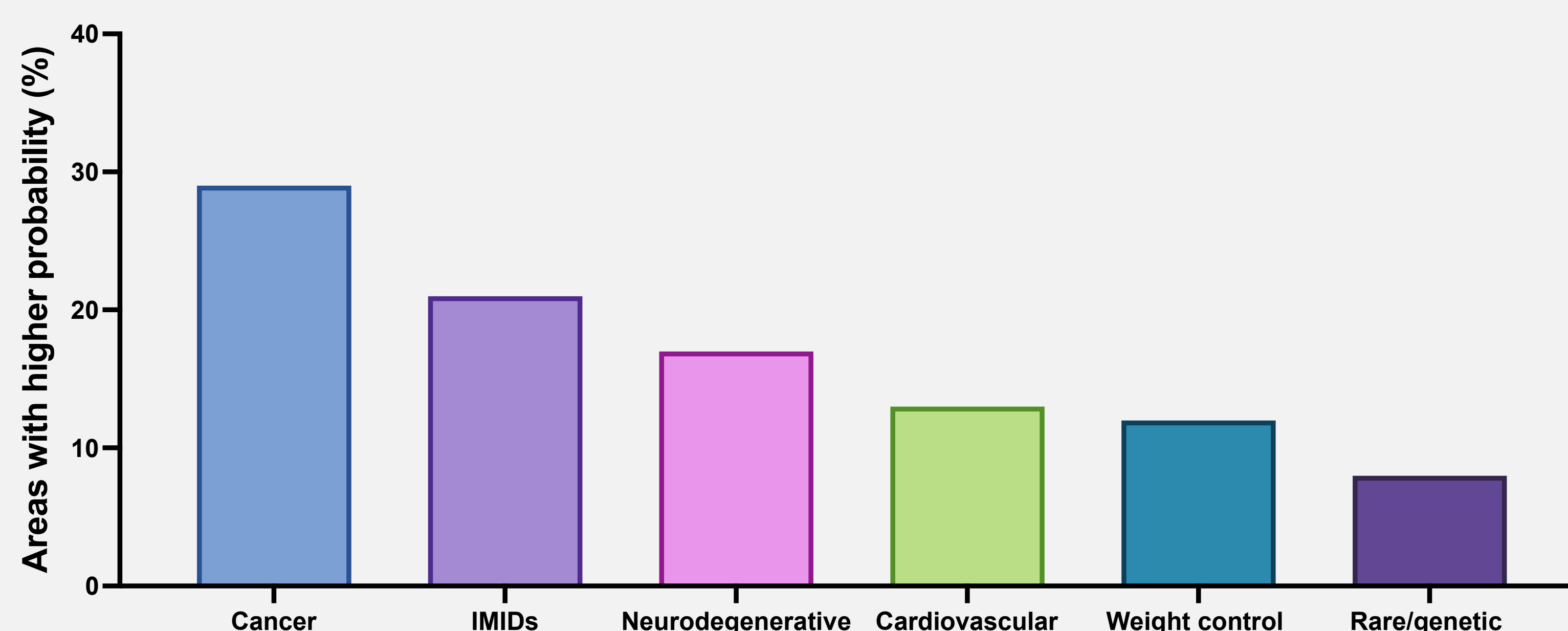


Figure 1. Main disease groups identified by OpenAI as areas with the greatest potential for drug commercialization in the coming years.

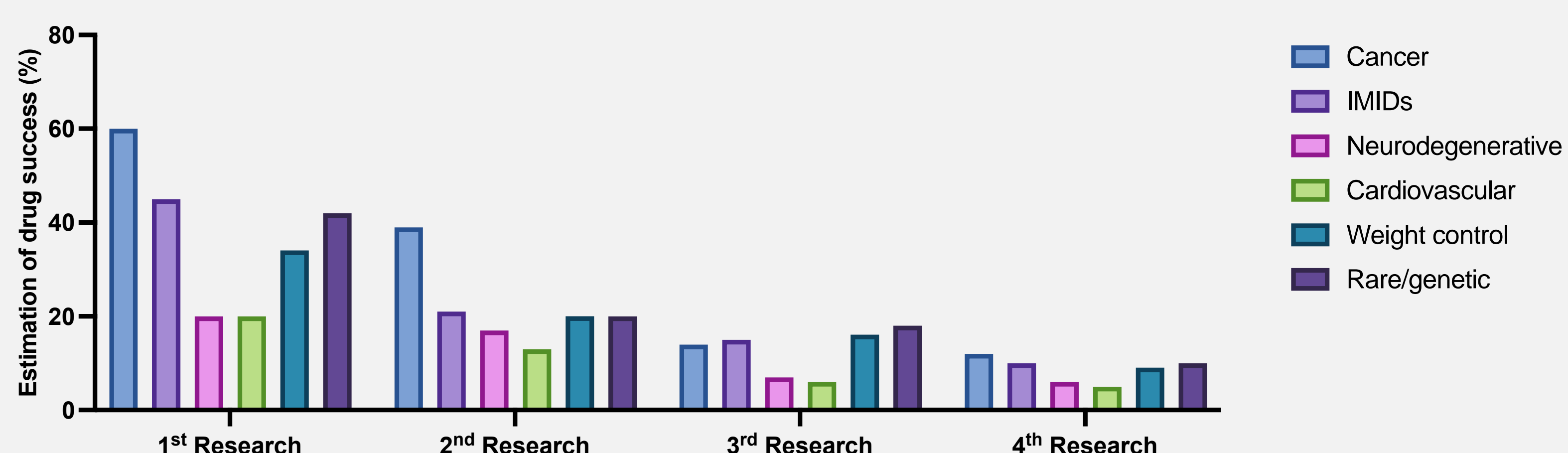


Figure 2. Average probability of success in commercializing a drug by area as estimated by the different OpenAI models.

They **identified up to 143 active ingredients with potential likelihood of approval** in the near future.

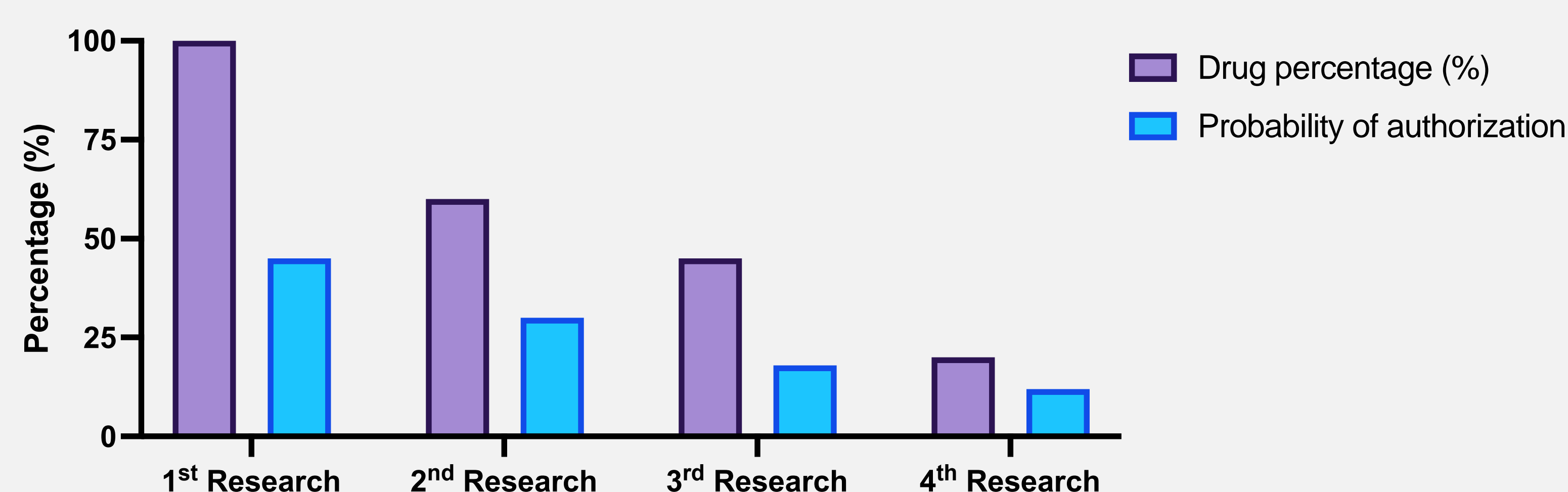


Figure 3. Average estimation of the percentage of drugs and the probability of authorization generated by the different OpenAI models based on the narrowing of the different marked search parameters.

Significant limitations were observed in the models' ability to provide accurate and reliable information on statistical comparisons and probabilistic estimates. In particular, the **models had difficulties providing data on the relative efficacy and safety of different drugs**. Furthermore, when narrowing search parameters or specifying the obtaining of certain results, the **models became blocked and began to provide incorrect or fabricated data**.

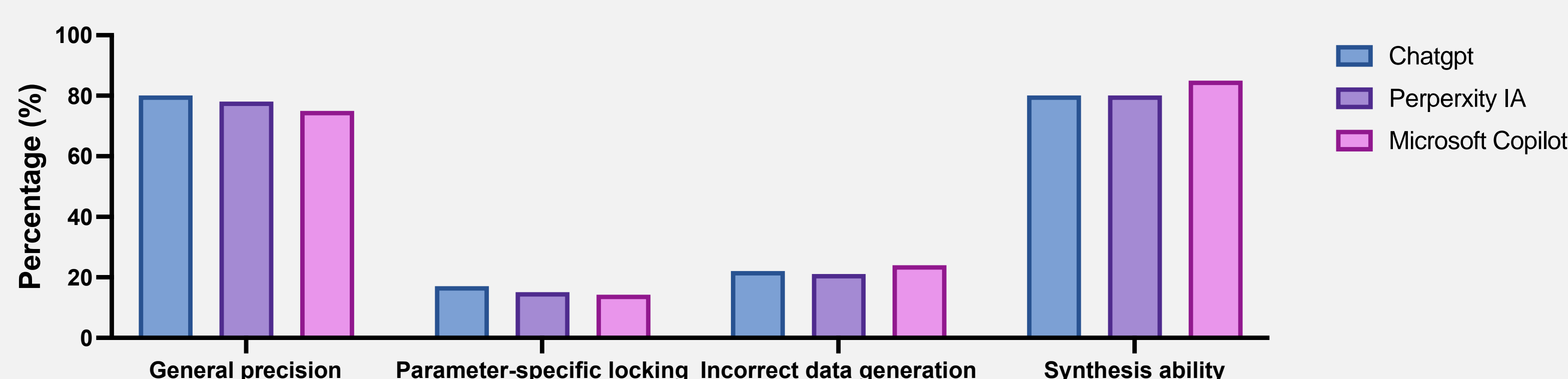


Figure 4. Limitations of OpenAI models when used as Horizon Scanning tools according to the study methodology.

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