

INPLASY

The efficacy of Artificial Intelligence to predict Post-operative Outcomes in Posterior Segment Ophthalmic Surgeries - A systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202380012

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 01 August 2023 and was last updated on 01 August 2023.

INTRODUCTION

Review question / Objective To assess the current knowledge regarding the use of artificial intelligence in predicting post-operative outcomes in patients undergoing posterior segment ophthalmic surgery.

Condition being studied Population: Patients undergoing ophthalmic surgery on the posterior segment of the eye. Intervention: Utilization of artificial intelligence as a predictive tool. Outcome: Successful prediction of post-operative outcomes.

METHODS

Search strategy A systematic and thorough database search will include MEDLINE, Embase, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, IEEE, Compendex, Web of Science, Scopus, and ProQuest Dissertations and Theses. Additionally, a grey literature search will be performed using Google Scholar.

Participant or population Population: Patients undergoing ophthalmic surgery on the posterior segment of the eye.

Intervention Intervention: Utilization of artificial intelligence as a predictive tool.

Comparator Not utilizing AI to predict post-operative outcome of posterior segment ophthalmic surgeries.

Study designs to be included Inclusion of artificial intelligence for predicting patient outcomes after ophthalmic surgical procedures in the posterior segment of the eye. Studies on laser-based procedures without a surgical element and other non-surgical procedures will not be included. Studies that did not define and predict at least one patient outcome will also be excluded from the review. No restrictions on the types of studies.

Eligibility criteria Inclusion criteria: Primary studies using AI to predict outcomes after ophthalmic surgical procedures. Exclusion criteria:

Studies involving laser procedures, intraocular lens power calculations, injections, and non-predictive approaches.

Information sources MEDLINE, Embase, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, IEEE, Compendex, Web of Science, Scopus, and ProQuest Dissertations will be utilized as information sources.

Main outcome(s) Effective prediction of post-operative outcomes and complications.

Quality assessment / Risk of bias analysis Risk-of-bias assessment will be conducted for all studies included in this systematic review using the PROBAST risk-of-bias tool.

Strategy of data synthesis The main objective is to evaluate the efficacy of AI algorithms in predicting ophthalmic post-operative outcomes. Data on surgical outcomes, complication rates, and the predictive ability of these algorithms will be extracted for further analysis. A narrative synthesis will be performed, incorporating descriptive, qualitative, and quantitative analysis. The data will be analyzed using Microsoft Excel, GraphPad Prism, and Cochrane RevMan.

Subgroup analysis No subgroup analysis is planned for this systematic review.

Sensitivity analysis Sensitivity analysis of the extracted data will be conducted using Microsoft Excel.

Country(ies) involved Canada.

Keywords AI to predict post-operative outcomes of ophthalmic surgery.

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