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RoBVisShiny: An Interactive R Shiny Application for Visualizing Risk-of-Bias Assessments

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Background

Assessing the risk of bias (RoB) in studies included in systematic reviews is crucial, and visualizing these assessments helps communicate findings effectively. However, generating standard RoB summary figures often requires manual effort or specialized software knowledge

Methods

We developed RoBVisShiny, an interactive web application using R (v4.4.0) and the Shiny framework (v1.8.1.1) with a bs4Dash (v2.3.2) interface. It accepts RoB assessment data (CSV or Excel) formatted according to common tools (ROB2, ROBINS-I, QUADAS-2, ROB1, NOS). Visualizations are created using ggplot2 (v3.5.1), plotly, and other R packages

Results/Functionality

RoBVisShiny automatically generates key RoB visualizations based on user-uploaded data and the selected assessment tool. Outputs include interactive summary bar plots showing the distribution of judgments across domains, traffic light plots displaying individual study judgments for each domain, and faceted frequency plots. It also offers exploratory K-means cluster analysis to identify potential patterns in RoB profiles.

Users can customize plot appearance and download plots (PNG) and summary tables (CSV/Excel). Sample datasets for each supported tool are included

Conclusions

RoBVisShiny provides an easy-to-use, interactive platform for generating standard visualizations of risk of bias assessments. By simplifying the creation of summary and traffic light plots for multiple RoB tools, it aims to improve the efficiency and consistency of reporting in systematic reviews

HOW TO CITE

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