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IMPROVING MENTAL HEALTH OUTCOMES: PREDICTING PSYCHIATRIC READMISSIONS THROUGH CLINICAL TEXT ANALYSIS USING NATURAL LANGUAGE PROCESSING (NLP)

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Background

Psychiatric readmissions present major clinical and economic challenges. In 2023, 30-day readmission rates in Israeli mental health hospitals reached 17.8%. Most prediction models use structured EHR data, overlooking valuable insights in unstructured clinical notes

Objectives

The main objective of this research project is To evaluate the effectiveness of NLP in Predicting psychiatric readmissions

Methods

- Retrospective EHR-based cohort (Beer-Sheva MHC, 2004–2025)
- Mapping readmission risk via structured clinical questions
- Use of multilingual and Hebrew NLP models
- Model evaluation on HeQ Hebrew QA dataset

Results

Preliminary tests show that training on labelled Q/A datasets improves model accuracy, in particular for no-answer questions

Evaluating Language Models for Hebrew Clinical Q/A

Exact Match: The proportion of model-predicted answers matching human-annotated labels
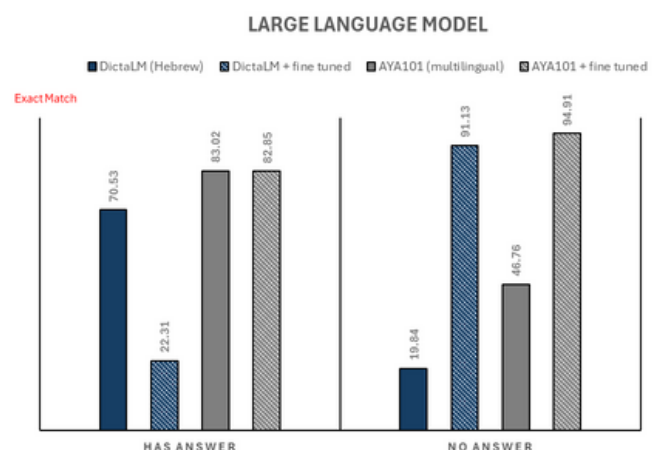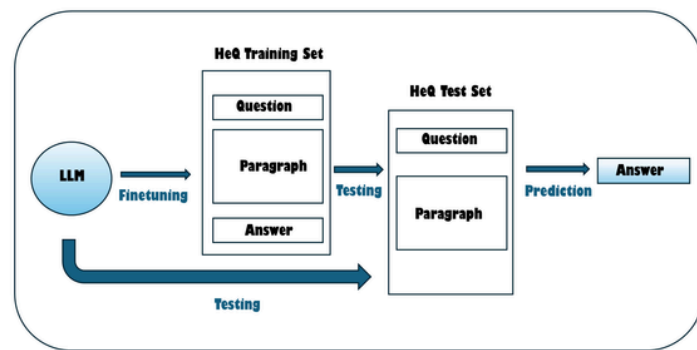
Conclusions

Hebrew-language NLP for Q/A has the potential to improve the identification of patients at risk for psychiatric readmission.
integrating such tools into clinical workflows may support more personalized, preventive, and effective mental health care