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Original Research Article

Use of an Artificial Intelligence–Based Language Model as a Clinical Support Tool in a Resource-Limited Indian Hospital: A Real-World Physician Experience

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Abstract:

Background: Language models based on artificial intelligence (AI) are being looked into more and more as clinical support tools to make healthcare more efficient and help with decision-making. Their function in resource-constrained hospital environments is still insufficiently researched.

Objectives: To assess the feasibility, usability, and safety of an AI-based language model as a supervised clinical support tool in a resource-constrained Indian hospital.

Methods: This prospective observational study was carried out over two years (2023–2025) at Hariram Hospital, Motihari. About 200 clinical contacts, both inpatient and outpatient, were evaluated. The AI tool was utilised with the help of a doctor to help with paperwork, support differential diagnosis, and teach patients. The results were better workflow, less time spent on paperwork, happier doctors, and fewer safety incidents.

Results: The AI technology cut down on the time it took to write reports and made clinical notes clearer. There were no bad clinical events associated to AI. Doctors were very happy with the service.

Conclusion: Using an AI-based language model under supervision is possible and helpful in hospitals with few resources, as it makes things more efficient without putting patients at risk.

Keywords: Artificial intelligence, Clinical decision support, Digital health, Resource-limited settings, India.

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Introduction

Artificial intelligence has quickly become a game-changer in healthcare, providing technologies that help with clinical decision-making, documentation, and getting patients involved [1]. Language-based AI models have showed potential in combining medical data and helping doctors in real time [2].

In Indian hospitals with few resources, delivering healthcare is often difficult because there are too many patients, not enough staff, and paperwork that takes a long time to fill out [3]. These problems make doctors more likely to get burned out, which could have an indirect effect on the quality of care [4]. Digital solutions that improve efficiency without raising costs are therefore very interesting [5].

Recent research from affluent environments indicates that AI-assisted documentation and decision support might alleviate administrative burdens and enhance clinical efficiency [6–8]. Nonetheless, apprehensions persist regarding precision, ethical use, data confidentiality, and excessive dependence on automated systems [9–11].

There isn't much evidence about how AI technologies are being used in low- and middle-income countries [12–14]. Indian healthcare systems are very different from Western ones when it comes to infrastructure, patient complexity, and digital preparedness [15].

This work aimed to assess the practical feasibility, efficacy, and safety of a supervised AI-driven language model employed as a clinical assistance tool in a resource-constrained Indian hospital [16–17].

Materials and Methods

Design of the Study: Prospective observational study.

Study Location: Hariram Hospital, Motihari, Bihar, India.

Length of Study: From 2023 to 2025.

Size of the Sample: About 200 clinical encounters.

Inclusion Criteria

- Adult inpatient and outpatient clinical encounters
- Treating physician consent to use AI support
- AI use restricted to supervised clinical support

Exclusion Criteria

- Use of AI for autonomous clinical decision-making
- Emergency situations requiring immediate intervention

Study Procedure

The AI-based language model was used for:

- Drafting clinical notes and discharge summaries
- Assisting with differential diagnoses
- Generating patient education explanations

Final clinical decisions remained entirely physician-driven.

Outcome Measures

- Reduction in documentation time
- Physician satisfaction
- Occurrence of AI-related adverse events

Results

Table 1 shows a summary of the baseline attributes and workflow outcomes. Using the AI-based language model made documentation far more efficient during clinical visits.

Efficiency of Documentation: After AI was added, the time it took to perform paperwork went down by about 30–50%. Figure 1 shows this improvement in a graph that compares the time it takes to document before and after using AI.

Safety Outcomes: There were no adverse clinical events over the research period that could be linked to AI help. As shown in Table 1, all AI-generated outputs were checked and approved by the doctors who treated the patients.

Physician Satisfaction: Most doctors reported that the AI tool made their work more efficient and reduced cognitive burden, which supports its use in everyday clinical treatment (Figure 2).

Table 1: Clinical Workflow Outcomes with AI Assistance (n ≈ 200)

Parameter	Observation
Documentation time reduction	30–50%
AI-related adverse events	None observed
Physician satisfaction	High

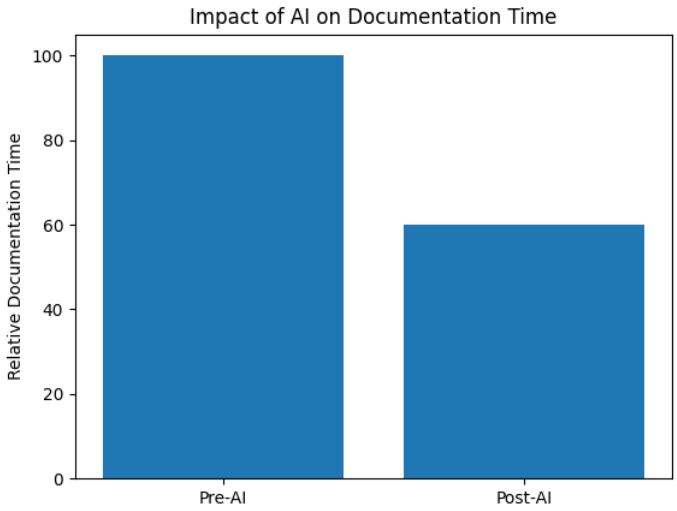

Figure 1: Bar graph showing relative reduction in documentation time before and after AI integration.

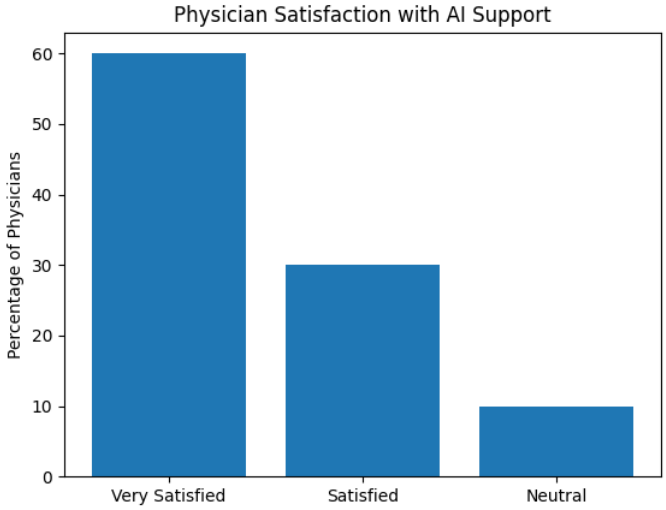

Figure 2: Bar graph depicting physician satisfaction levels with AI-assisted clinical support.

Discussion

This study shows that using an AI-based language model under supervision can significantly speed up clinical workflow in an Indian hospital with few resources. The documented decrease in time corresponds with results from earlier international research [18–20].

The lack of AI-related adverse events underscores the necessity of sustaining professional monitoring to mitigate concerns regarding accuracy and patient safety [21]. AI technologies should be seen as extras, not as replacements for clinical judgement [22]. The high level of satisfaction among physicians in this study indicates the potential of AI to reduce administrative workload, a recognised factor in clinician burnout [23]. In settings with limited resources, such efficiency improvements may lead to enhanced patient care and more effective use of scarce personnel [24, 25].

Limitations: The limitations of this study encompass its single-center design and descriptive analysis. To further confirm these results, larger multicentric research with objective workload measurements are needed.

Conclusion

When utilised with tight supervision by a doctor, AI-based language models can be a useful and effective clinical support tool in Indian hospitals that don't have a lot of resources. Adding them to ordinary practice can make things more efficient, cut down on paperwork, and keep patients safe.

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