Development of a Large Language Model Chatbot to aid healthcare professionals in Childhood Obesity Management

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INTRODUCTION

- Obesity is increasing at an alarming rate making childhood obesity a global health challenge [1].
- BIO-STREAMS, an EU-funded project, delivers new evidence, methodologies and tools to support healthcare professionals (HCPs) in addressing this challenge
- We propose a specialized LLM-based chatbot as a "virtual consultant" to deliver evidence-based pediatric obesity guidance and improve consistency of care.
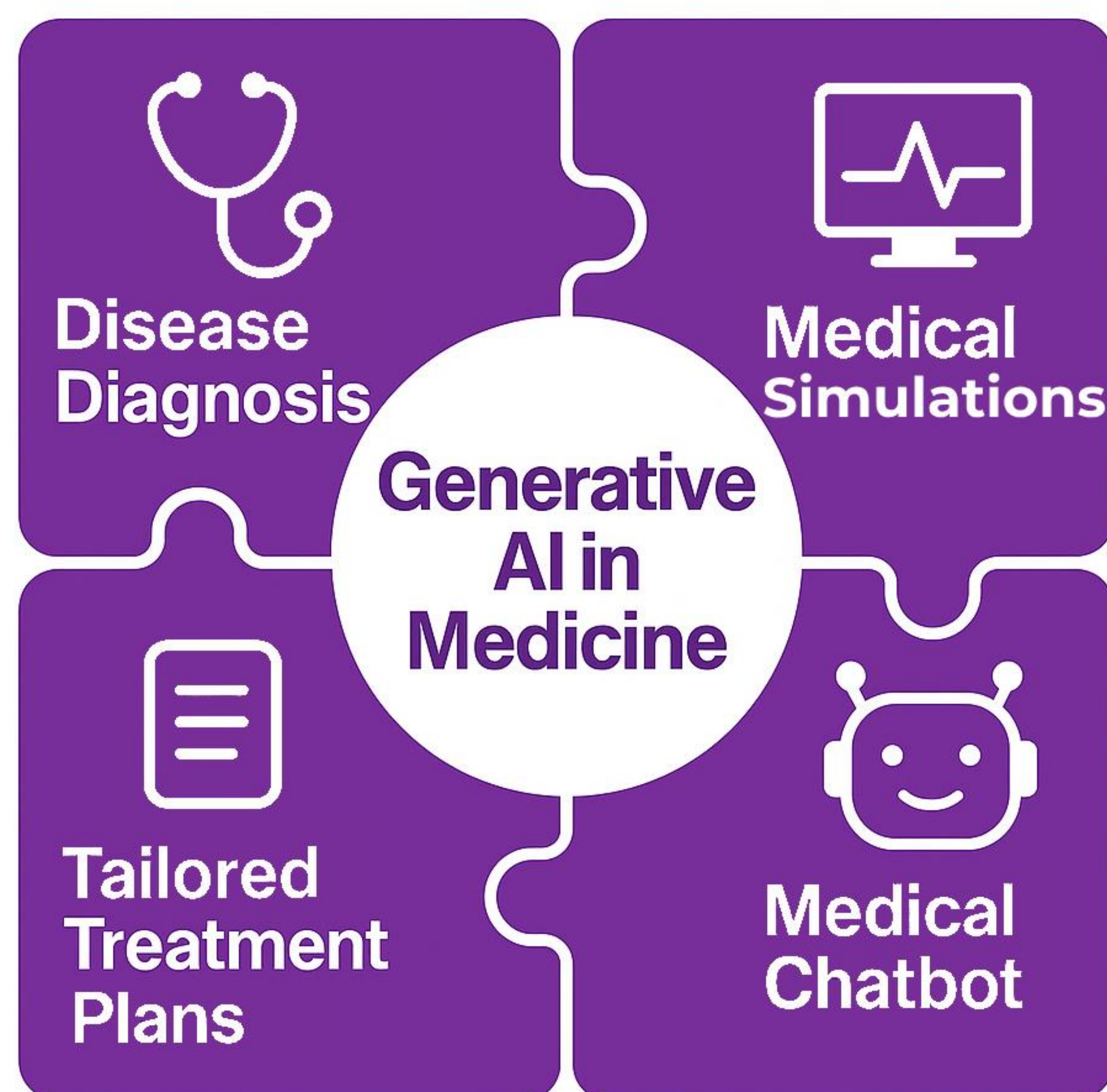

BACKGROUND

- HCPs face severe time constraints and information overload in their clinical routine.
- The aggregation of overlapping pediatric obesity guidelines overwhelms physicians and hampers consistent, evidence-based care.
- Large Language Models (LLMs), offer promising ways for improving clinical decision-making [2].
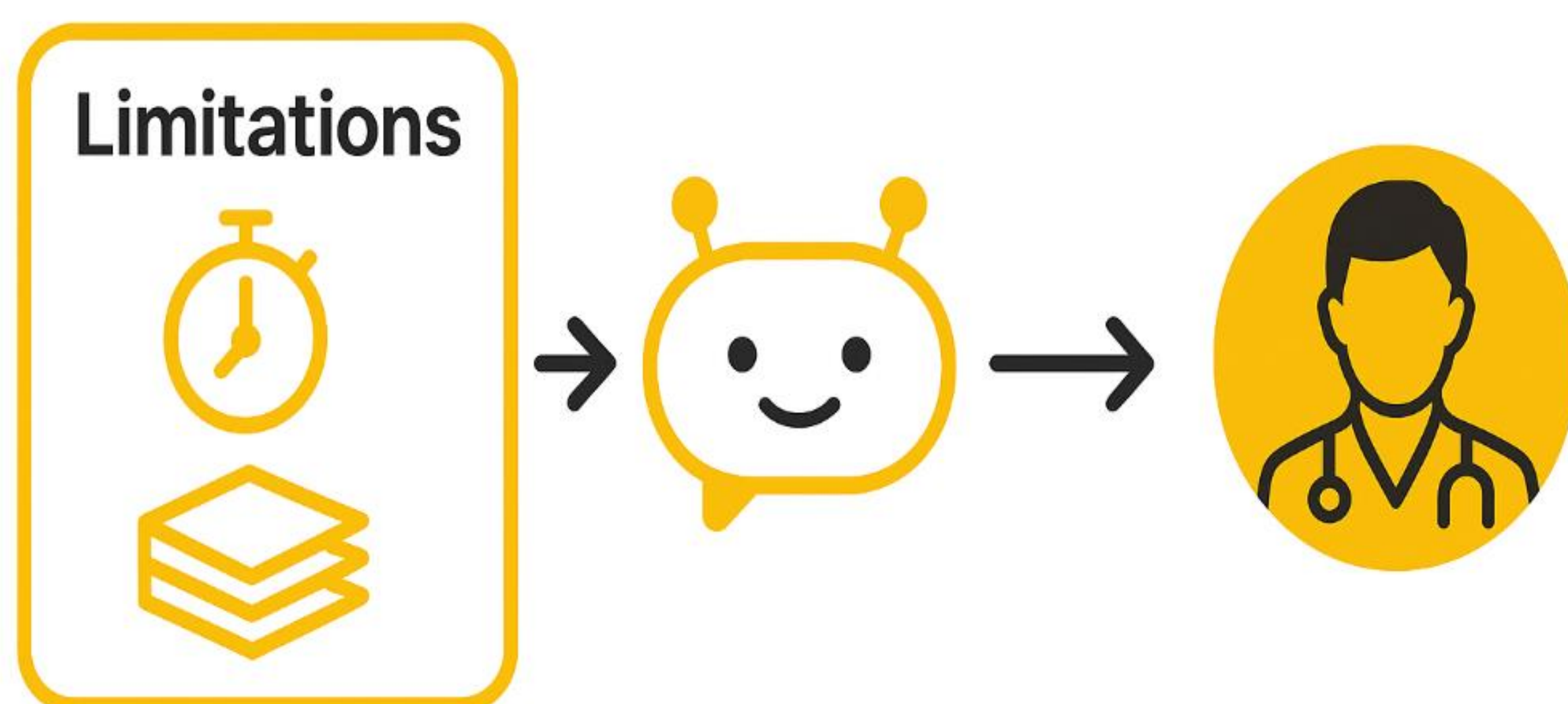
METHODS

- We develop a chatbot to provide HCPs evidence-based recommendations on management of childhood obesity.
- Chatbot powered by PMC-LLaMA [3], a LLaMA variant pre-trained on extensive biomedical literature, instilling it with built-in expertise in pediatric obesity terminology and clinical concepts.

- Fine-Tuning Strategy:
  - Patient–Doctor Dialogues: Curate real-world pediatric obesity consultations to train conversational fluency and context-sensitive response patterns [4].
  - Guideline Q&A Pairs: Translate key recommendations from guidelines into structured question–answer datasets [5].
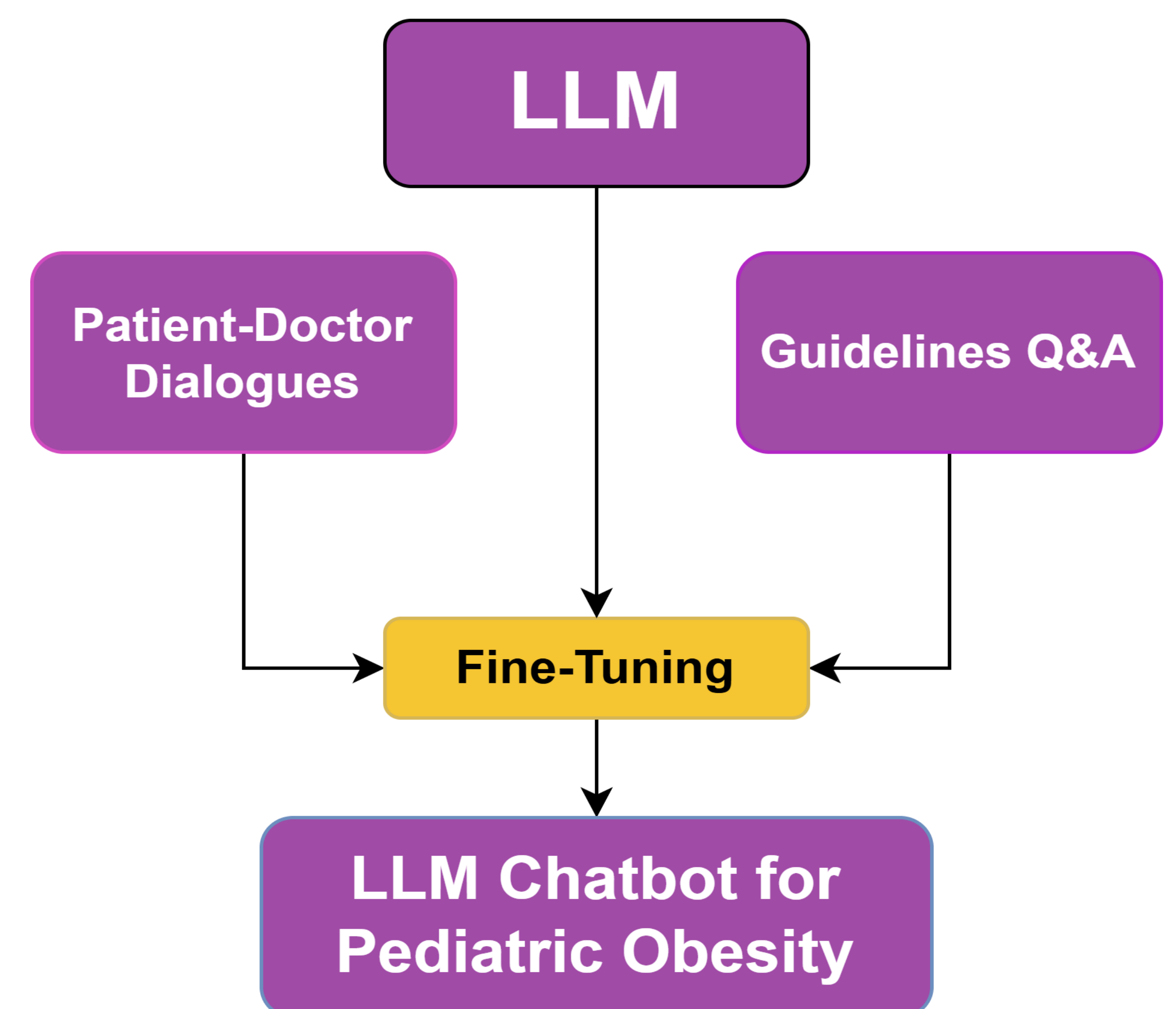
- LLMs can often 'hallucinate', so we implement a robust validation pipeline to ensure reliability of recommendations.
- In collaboration with pediatric clinicians, we will evaluate the chatbot using realistic case scenarios and test questions, scoring responses on a 5-point Likert scale across six domains: accuracy, relevance, clarity, empathy, safety, and consistency, while also gathering qualitative feedback.

VISION

- Our vision is a clinician-approved AI consultant for pediatric obesity that integrates evidence-based guidelines and seamless workflow integration to empower providers without replacing their expertise.

REFERENCES

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