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Development of an Evidence-Based Artificial Intelligence Literacy Curriculum for Physiotherapy Students in India: A Methods Paper

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ABSTRACT

Objective: The integration of Artificial Intelligence (AI) into global healthcare necessitates corresponding advancements in health professions education. This study aimed to develop a comprehensive, evidence-based AI literacy curriculum specifically tailored for physiotherapy students in India, where such training is currently absent.

Methods: A systematic curriculum development process was employed, guided by Kern's six-step framework. This involved a literature review of global AI applications in physiotherapy and healthcare education, a targeted needs assessment identifying gaps in current Indian physiotherapy training, and synthesis and contextualization to adapt international evidence for the Indian healthcare setting.

Results: The outcome is a detailed 12-week, 36-contact-hour curriculum titled 'Artificial Intelligence Literacy in Physiotherapy Practice'. The curriculum consists of five sequential modules emphasizing low-cost tools, Indian case studies, ethical reasoning, and hands-on exercises.

Conclusion: This paper provides a rigorously developed, ready-to-implement framework to address the critical gap in AI literacy within Indian physiotherapy education. Future research should evaluate its effectiveness in improving student competencies and readiness for AI-integrated healthcare.

Keywords: *Artificial Intelligence, Physiotherapy Education, Curriculum Development, Digital Health, India, AI Literacy*

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Introduction

Artificial Intelligence (AI) is transforming healthcare globally, driving innovations in diagnostics, treatment planning, and rehabilitation (Topol, 2019). In physiotherapy, AI supports gait analysis, outcome prediction, and personalized rehabilitation (Muro-de-la-Herran et al., 2014; O'Reilly et al., 2019). However, in India, physiotherapy curricula lack structured AI education, despite the country's rapid digital

health expansion through the Ayushman Bharat Digital Mission. This paper details the systematic development of a 12-week AI literacy curriculum for physiotherapy students in India using Kern's six-step model, aimed at producing clinicians equipped to critically and ethically engage with AI.

2. Methods

The curriculum was developed using Kern’s Six-Step Framework (Kern et al., 2009), focusing on problem identification, needs assessment, goal setting, educational strategy design, implementation planning, and evaluation design.

Step 1: Problem Identification — Literature revealed increasing AI use in physiotherapy (Giggins et al., 2013; Rajkomar et al., 2019) but little educational integration in India.

Step 2: Needs Assessment — Target learners were 3rd-year Bachelor of Physiotherapy students. No AI content existed in current syllabi.

Step 3: Goals and Objectives — Define competencies in understanding, evaluating, and applying AI tools in physiotherapy.

Step 4: Educational Strategies — Five modules developed: Fundamentals, Applications, Ethics, Critical Evaluation, and Practical Case Studies.

Step 5: Contextualization — Adapted international evidence to Indian conditions: low-cost tools, bilingual resources, cultural sensitivity.

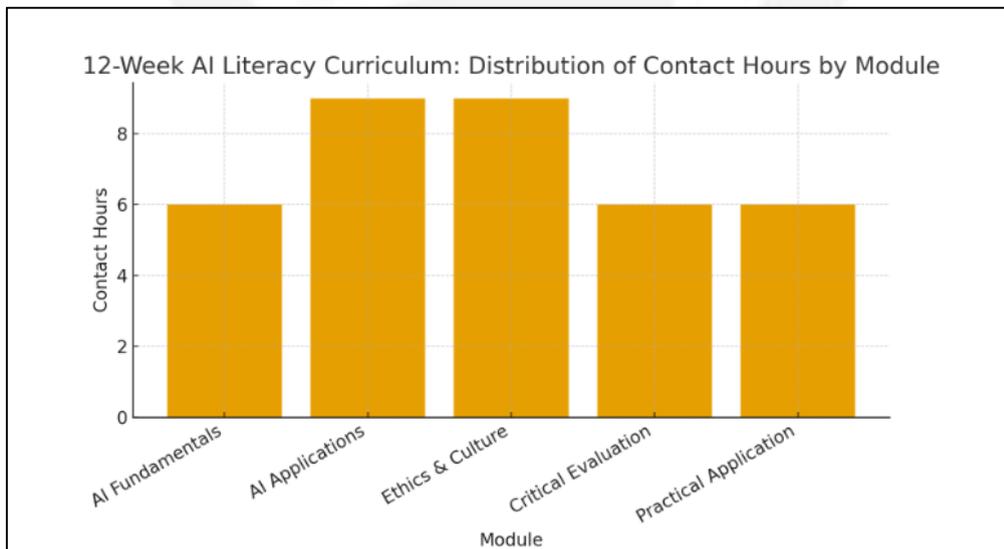
Step 6: Evaluation Design — Planned pre-post testing, simulation, and project-based assessments.

3. Results

The developed curriculum, 'Artificial Intelligence Literacy in Physiotherapy Practice,' spans 12 weeks and 36 contact hours.

Table 1 summarizes the structure.

Module	Focus	Key Content	Pedagogical Strategies
1. AI Fundamentals	Core Concepts	AI/ML basics, data types, Indian healthcare context	Lectures, interactive activities
2. AI Applications	Clinical Practice	Gait analysis, wearable tech, predictive models	Hands-on tool use, demonstrations
3. Ethics & Culture	Responsible Use	Bias, privacy, informed consent, cultural aspects	Debates, role-plays, case analyses
4. Critical Evaluation	Evidence-Based Practice	Validation methods, performance metrics	Research critiques, tool evaluation
5. Practical Application	Integration	Simulations, implementation planning	Group projects, final presentations



Key curriculum characteristics include:

- Progressive learning from basic to applied AI concepts.
- Cultural contextualization for Indian healthcare.
- Emphasis on ethics, bias, and patient safety.

- Hands-on practical learning through simulations.

4. Discussion

This curriculum represents a pioneering effort in integrating AI literacy into physiotherapy education in India. It operationalizes global AI

competencies within a low-resource educational environment. The use of Kern's model ensures systematic curriculum design. The inclusion of ethical and contextualized content promotes responsible AI use (Char et al., 2018; Obermeyer et al., 2019). Unlike previous theoretical discussions (Wartman & Combs, 2018), this curriculum offers a concrete, adaptable framework.

5. Conclusion

The developed 12-week curriculum provides a structured, evidence-based approach to embedding AI literacy in physiotherapy education in India. By fostering ethical, critical, and applied

4.1 Limitations And Scope For Future Research

The primary limitation is the absence of pilot implementation data. Future studies should assess its impact on student competencies, confidence, and ethical awareness. Longitudinal studies could track professional adaptation to AI in clinical practice. Faculty development evaluation is also recommended to sustain implementation quality.

understanding, it prepares future clinicians for AI-integrated healthcare systems. This model can be adapted for other allied health professions in similar contexts.

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