Applications and Challenges of Implementing Artificial Intelligence in Medical Education: An Integrative Review

Appendix I

Overview of current use of AI in medical education; Review of the 37 identified full-text articles revealed three main uses: curriculum, learning and assessment

Focus	Advantages of use	Articles	Total number of articles
Curriculum	Comprehensive analysis of the curriculum	[30]	1
Learning	Feedback for learning	[43], [14], [31], [21], [13], [33], [16], [41], [34], [24], [29], [42], [40], [22], [44], [18], [25], [28], [17], [23], [26]	21
	Evaluation of the learning process with guided learning pathway	[14], [15], [31], [11], [21], [13], [33], [41], [24], [27], [37], [40], [22], [25], [28], [17], [23], [26], [32], [12]	18
	Decreased costs	[43], [14], [13], [34], [29], [44], [25], [17]	8
	No harm to patients	[43], [14], [36], [33], [34], [44]	6
	Less teacher supervision required	[20], [44], [46]	3
Assessment	Quicker	[35], [19], [39], [38]	4
	Objective assessment	[35], [19], [39]	3
	Feedback on assessment	[19], [39]	2
	Decreased costs	[39]	1

Subgroup analysis showing the target audiences of the 37 reviewed articles

Focus	Target group			
	Undergraduates	Post-graduates	Continuing medical education (CME)	Not specified
Curriculum	1	0	0	0
Learning	21	13	8	6
Assessment	3	1	0	0
Total	**25**	**14**	**8**	**6**

In addition, there were three main target groups identified in the 37 reviewed articles (Table 3); medical undergraduates (n= 25), postgraduates (n= 14), and Continuing Medical Education (CME) (n= 8). No specific target group was identified in 6 of the articles; they were referred to as "students."

Overview of challenges of implementation of AI in medical education; Review of the 34 identified full-text articles using the ETAM and DOI theory

	Challenges	Articles (No as indicated in the reference list)	Total number of articles
Acceptance of AI as technology			
Perceived usefulness	Difficulty in assessing the effectiveness of AI	[15], [20], [13], [33], [41], [42], [19], [37], [40], [22], [44], [18], [25], [28]	14
	Limited scalability	[32], [12], [18], [25], [26], [45]	6
	Failure of AI system (e.g., suggestions for learning, incorrect information)	[13], [33], [24]	3
	Over-generalization of medical concepts	[15], [21], [29], [46]	4
Perceived ease of use	Technical faults, e.g., network errors	[20], [13], [34]	3
Diffusion of AI as an innovation			
AI technical aspects	Difficulty in creating the model – large sample size, many trials required	[43], [14], [30], [35], [34], [24], [27], [29], [42], [19], [39], [32], [44], [12], [23], [45]	16
	Experienced, knowledgeable content specialist required	[14], [34], [19], [44], [18], [25], [38], [23], [26], [47]	10
	Gaps in knowledge between physicians and engineers	[36], [27], [32], [25]	4
	Lack of general architecture	[21], [27]	2

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