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Barriers, limitations, and challenges to the implementation of artificial intelligence in Latin American healthcare systems: a scoping review

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Online Resource 5: All 39 barrier sub-themes among the 1,031 distinct verified barrier instances (43 sources), with the number of instances, the number empirically studied, the number of sources reporting the sub-theme at least once, and the number of those sources reporting at least one empirically studied instance of it. Sorted by instance count; the twelve largest are those shown in Figure 4.

Sub-themes are not mapped to a single thematic domain here, because instances of the same sub-theme were coded to different domains; the sub-theme by domain cross-tabulation is in the deposited dataset. Empirically studied means traceable to data the source collected, quantitative or qualitative (Methods). The fourteen sub-themes admitted after the coding manual was frozen are defined in Online Resource 4, Part B2.

Sub-themes are not mapped to a single thematic domain here, as instances of the same sub-theme were coded to different domains, so the full sub-theme by domain distribution is given in Table S4.3 of Online Resource 4, where column totals reproduce Figure 3. Sub-themes beyond the twelve shown in Figure 4 are included for completeness.

Sub-theme	**Instances (n)**	**Empirically studied, n (%)**	**Asserted (n)**	**Sources reporting (n of 43)**	**Sources with at least one studied instance, n (%)**
governance/regulatory framework gap	146	71 (48.6)	75	38	13 (34.2)
data quality/availability	80	20 (25.0)	60	28	9 (32.1)
equity/access	73	15 (20.5)	58	34	6 (17.6)
connectivity/infrastructure gap	72	15 (20.8)	57	38	9 (23.7)
digital literacy/workforce capacity gap	72	28 (38.9)	44	35	12 (34.3)
trust/acceptance	63	21 (33.3)	42	32	12 (37.5)
cost/procurement/funding scarcity	52	16 (30.8)	36	29	10 (34.5)
data protection/privacy	51	11 (21.6)	40	29	8 (27.6)
poor interoperability	46	8 (17.4)	38	24	5 (20.8)

workflow integration	44	13 (29.5)	31	23	7 (30.4)
model validation/generalizability gap	37	18 (48.6)	19	20	11 (55.0)
liability/ethical risk	34	9 (26.5)	25	25	8 (32.0)
workforce shortage/multidisciplinary gap	32	8 (25.0)	24	21	4 (19.0)
algorithmic bias/fairness	27	5 (18.5)	22	20	4 (20.0)
clinical validation gap	22	8 (36.4)	14	18	7 (38.9)
explainability/black-box	22	7 (31.8)	15	18	5 (27.8)
change management/stakeholder engagement	21	6 (28.6)	15	16	5 (31.2)
weak collaborative research networks	17	10 (58.8)	7	12	7 (58.3)
technological dependency/sovereignty	16	3 (18.8)	13	12	2 (16.7)
regulatory heterogeneity/harmonization gap	13	5 (38.5)	8	10	3 (30.0)
technical performance/accuracy limitation	13	9 (69.2)	4	7	4 (57.1)
language/cultural adaptation gap	10	3 (30.0)	7	8	2 (25.0)
adoption lag/slow uptake	8	1 (12.5)	7	7	1 (14.3)
regional evidence-base under-representation	6	1 (16.7)	5	6	1 (16.7)
device/technology approval process	6	3 (50.0)	3	5	2 (40.0)
private-sector influence on governance	6	0 (0.0)	6	4	0 (0.0)
unproven real-world benefit	6	3 (50.0)	3	6	3 (50.0)

conceptual/terminological imprecision	6	1 (16.7)	5	4	1 (25.0)
bureaucratic/administrative barriers	5	3 (60.0)	2	2	2 (100.0)
over-reliance/automation bias/deskilling	5	2 (40.0)	3	4	2 (50.0)
environmental/energy sustainability	4	1 (25.0)	3	1	1 (100.0)
workforce displacement/substitution	4	1 (25.0)	3	3	1 (33.3)
analytical/data-processing capacity gap	3	0 (0.0)	3	3	0 (0.0)
innovation/R&D capacity gap	3	1 (33.3)	2	3	1 (33.3)
research funding/agenda misallocation	2	1 (50.0)	1	2	1 (50.0)
data access/sharing restriction	1	0 (0.0)	1	1	0 (0.0)
patient/public AI literacy gap	1	1 (100.0)	0	1	1 (100.0)
evidence transferability gap	1	0 (0.0)	1	1	0 (0.0)
health-system fragmentation	1	0 (0.0)	1	1	0 (0.0)
All sub-themes	**1,031**	**328 (31.8)**	**703**	**43**	**27 (62.8)**