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Informed consent and ethical considerations in AI for dentistry and medicine: a scoping review

By

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Abstract Background: Informed consent (IC) is central to patient autonomy, yet its role in artificial intelligence (AI) for clinical deployment, model development, and secondary data use remains unclear in medicine and dentistry. Objectives: This review characterised how IC is justified and operationalised for AI; synthesised ethical, legal, governance, and practical requirements; identified gaps in consent models, stakeholders, and AI functionality; and developed author-derived communication thresholds for notification, routine clinical consent with explicit AI disclosure, or AI-specific IC. Methods: We conducted a PRISMA-ScR-guided scoping review with an OSF-registered protocol. MEDLINE, Scopus, IEEE Xplore, arXiv, Google Scholar, Web of Science, and HeinOnline were searched for English-language sources published 2015 to 25 May 2026. From 6,242 records, 116 reports were assessed; 69 were included, plus one manual source, yielding 70. Data were charted across 24 domains, synthesised, and appraised with JBI tools. Results: Publications peaked in 2024 (22/70, 31.4%). The evidence base was non-empirical: conceptual analyses (37/70, 52.9%) and narrative reviews/book chapters (17/70, 24.3%). Medicine-only sources predominated (60/ 70, 85.7%); dentistry-only sources accounted for 8/70 (11.4%). Traditional IC appeared alone in 46/70 sources (65.7%) and overall in 52/70 (74.3%); dynamic consent was uncommon (6/70, 8.6%). IC was endorsed in 67/70 (95.7%) and qualified in 40/70 (57.1%). Explainability/transparency was addressed in 65/70 (92.9%), and proposed solutions in 57/70 (81.4%), but formal protocols remained uncommon (6/70, 8.6%). Thresholds consolidated rules by AI application, automation, risk, data use, and patient decision relevance. Conclusions: AI-related IC is widely endorsed but remains fragmented and largely conceptual. Findings support a risk-adaptive approach to AI-informed consent, calibrated to AI function, automation, risk, data use, explainability, and clinical decision impact. The author-derived

thresholds offer a synthesis-informed basis for future governance guidance or framework development, pending empirical and stakeholder validation.

Keywords

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