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1059 – Hybrid architecture for a mastology clinical decision support system post-content validation and in compliance with the general data protection law

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Objective: To describe the conception and the experience of developing BrApp, an artificial intelligence agent designed as a clinical decision support system (CDSS) in mastology within Primary Health Care. BrApp is based on clinical-care flowcharts validated by specialists and structured in a hybrid architecture aligned with the Brazilian General Data Protection Law (LGPD), with a focus on the context of the Unified Health System.

Methods: This methodological study combined the content validation of clinical flowcharts with the development of an AI conversational agent on the Poe.com platform through prompt engineering. Decision flows were modeled in Figma using “if... then...” conditional logic, representing screening, clinical assessment, and medical conduct. Content validation was performed by seven mastologists selected according to the Fehring and Pasquali criteria, using a four-point Likert scale and calculating the Content Validity Index (CVI).

Results: All flowcharts presented a $CVI \geq 0.78$, with some achieving unanimous agreement ($CVI=1.00$). The validated knowledge was incorporated into BrApp in a hybrid architecture composed of a stateless AI agent, with a zero data retention policy, an electronic medical record as a permanent domain, and a persistence mechanism conditioned on the professional's decision, designed to support the early identification of breast changes and timely referral to secondary and tertiary levels of care.

Conclusion: The experience demonstrates the feasibility of integrating validated clinical flowcharts into a conversational agent in mastology within a CDSS architecture, thereby promoting content quality, usability, support for clinical decision-making, and regulatory compliance. From a health informatics perspective, the system proposes an architecture designed to integrate guidelines-based touchpoints, conversational interfaces, and an electronic health record environment, ensuring data governance and providing new means of interoperability with systems of the Brazilian Unified Health System.

Ethics: Approved by the Research Ethics Committee (CAAE 38302020.0.0000.5505).

Keywords: artificial intelligence; machine learning; breast cancer.