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Review Article

Digital technologies in wound care: a scoping review

Tecnologias digitais no cuidado de feridas: revisão de escopo

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Tiago Araújo Monteiro[1]
Aurilene Lima da Silva[2]
Isaque Lima de Farias[1]
Jairla Sousa Marcelino[1]
Fabiane do Amaral Gubert[1]
Viviane Mamede Vasconcelos Cavalcante[1]
Manuela de Mendonça Figueirêdo Coelho[1]

[1]Universidade Federal do Ceará. Fortaleza, CE, Brazil.
[2]Hospital de Messejana Dr. Carlos Alberto Studart Gomes. Fortaleza, CE, Brazil.

Corresponding author:
Manuela de Mendonça Figueirêdo Coelho
Rua Alexandre Baraúna, 1115 - Rodolfo Teófilo.
CEP: 60430-160. Fortaleza, CE, Brazil.
E-mail: manumfc2003@yahoo.com.br

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ABSTRACT
Objective*:* to map the types of digital technologies used in the care of people with wounds, as well as their functionalities and clinical applications. **Methods**: a scoping review conducted by means of searches in national and international databases, in addition to the grey literature. The materials included were those published between 2015 and 2025. The selection and extraction processes followed the JBI methodological recommendations. **Results***:* a total of 30 studies were included, with predominance of mobile apps, Artificial Intelligence algorithms and intelligent dressings. The studies reported a reduction in wound healing times, over 85% accuracy in tissue classification by means of artificial intelligence and an approximate 2% metrological error in digital measuring apps. Studies for technology development and validation prevailed, especially in outpatient and hospital contexts. **Conclusion***:* mobile apps, artificial intelligence algorithms, digital platforms and intelligent dressings were the main digital technologies identified in wound care, with apps mainly targeted at measurement, monitoring, clinical documentation and decision-making support. **Contribution to practice***:* technological integration in the Unified Health System and the private sector requires structural planning, professional training, economic-clinical indicators and intersectoral articulation to ensure efficient, sustainable and egalitarian care.
Descriptors: Digital Health; Health Systems; Primary Health Care; Nursing Care.

RESUMO
Objetivo*:* mapear os tipos de tecnologias digitais utilizadas no cuidado de pessoas com feridas bem como suas funcionalidades e aplicações clínicas. **Métodos**: trata-se de uma revisão de escopo, conduzida por meio de buscas em bases de dados nacionais, internacionais e na literatura cinzenta. Foram incluídas publicações no período entre 2015 e 2025. A seleção e extração dos dados seguiram as recomendações metodológicas do JBI. **Resultados***:* foram incluídos 30 estudos, com predominância de aplicativos móveis, algoritmos de inteligência artificial e curativos inteligentes. Os estudos relataram redução no tempo de mensuração das lesões, acurácia superior a 85% na classificação tecidual por inteligência artificial e erro metrológico aproximado de 2% em aplicativos de mensuração digital. Predominaram estudos de desenvolvimento e validação tecnológica, especialmente em contextos ambulatoriais e hospitalares. **Conclusão***:* aplicativos móveis, algoritmos de inteligência artificial, plataformas digitais e curativos inteligentes constituíram as principais tecnologias digitais identificadas no cuidado de feridas, com aplicações voltadas principalmente à mensuração, monitoramento, documentação clínica e suporte à decisão. **Contribuição para a prática***:* a integração tecnológica no Sistema Único de Saúde e setor privado exige planejamento estrutural, capacitação profissional, indicadores econômico-clínicos e articulação intersetorial para garantir um cuidado eficiente, sustentável e equitativo.
Descritores: Saúde Digital; Sistemas de Saúde; Atenção Primária à Saúde; Cuidados de Enfermagem.

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Introduction

Wound care represents a significant challenge for health systems, especially given population aging and the increase in the number of chronic diseases such as diabetes mellitus and venous insufficiency. Those conditions contribute to higher incidence of hard-to-heal wounds, requiring effective and innovating approaches to manage them[1].

In this context, digital technologies emerge as promising tools to improve wound care. Mobile apps, Artificial Intelligence (AI) algorithms and intelligent dressings have been developed with the objective of optimizing assessment, monitoring and clinical decision-making, promoting more precise and efficient assistance[2-3]. Despite technological advances in wound care, there are still significant gaps in the scientific literature as for the systematic mapping of functionalities, classifications and evidence available about the clinical effectiveness of technologies applies to wound care.

Although various technological tools have already been developed to assess and treat wounds, many of them lack robust scientific validation and standardization in their clinical application. An integrative review identified that most of the existing algorithms for wound treatments have not been subjected to rigorous validation processes, which limits their reliability and practical applicability[4]. In addition to that, the analysis of mobile apps targeted at the care of cutaneous lesions revealed that few of them present validated scientific content, impairing their efficacy and safety in clinical use[5].

These gaps evidence the need for more in-depth and systematic studies that assess the technologies in question, aiming at their safe and effective integration to the assistance practice. Furthermore, conceptual and methodological heterogeneity is noticed across the studies available, involving different types of technologies, functionalities, clinical contexts and technological maturity levels[4-5]. In this scenario, a scoping review proves to be adequate because it allows for a broad mapping of all the evidence available, in addition to identifying emerging trends and characterizing the main applications and gaps related to the digital technologies used in the care provided to people with wounds.

Given the relevance of the topic, the following guiding question is set forth: Which are the types, functionalities and clinical applications of digital technologies applied to the care of people with wounds? Such research seeks to offer an encompassing view of the contributions made by these tools to improve care, identifying consolidated areas and opportunities for new research studies and technological development. In addition to that, understanding the potential of these technologies in the Collective Health context, especially in the Unified Health System (*Sistema Único de Saúde*, SUS) and at the Primary Health Care (PHC) level, is fundamental to devise public policies that promote fair access, integration with information systems and strengthening of care networks.

Thus, this review sought to map the types of digital technologies used in the care of people with wounds, as well as their functionalities and clinical applications.

Methods

Type of study

A scoping review conducted according to the JBI methodological recommendations[6]. The final report followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) guidelines[7]. The protocol corresponding to this review has already been registered on the Open Science Framework (OSF) platform, under doi: https://doi.org/10.17605/OSF.IO/BNHAX.

Research question

The research question followed the PCC model (Population, Concept, Context), as proposed by the JBI[6]. In this study, the Population corresponded to People with wounds, the Concept was Digital technologies and the Context included health care services and settings where digital technologies were applied in wound management, such as primary care, in-hospital care, specialized outpatient services, home-based care and Telemonitoring. Based on the above, the following research question is set forth: Which are the types, functionalities and clinical applications of digital technologies applied to the care of people with wounds?

Eligibility criteria

The eligibility criteria encompassed materials published between 2015 and 2025, dealing with digital technologies applied to wound care and meeting the variables described in the PCC acronym. The following were considered digital technologies: computer, electronic or connected resources used in wound care, including mobile apps, web platforms, Telemedicine systems, Artificial Intelligence, clinical decision-making support algorithms, monitoring software programs, specialized digital medical records, digital sensors, imaging technologies and digital communication tools applied to clinical management. Duplicate articles were excluded, as well as manuscripts not accessible in their full texts, editorials, letters to the editor and studies outside the thematic scope.

Search strategy

The search strategies were prepared according to the JBI recommendations[6] based on combining controlled descriptors (Medical Subject Headings, [MeSH], Descritores em Ciências da Saúde [DeCS] and Emtree) with free terms, structured by means of AND/OR Boolean operators. The main thematic axes included Wound Healing, Digital Health and Mobile Apps. The searches were made in the following databases: Medical Literature Analysis and Retrieval System Online (MEDLINE) via PubMed, Web of Science, SCOPUS, Excerpta Medica Database (EMBASE) and databases indexed in Biblioteca Virtual em Saúde (BVS), including Literatura Latino-Americana e do Caribe em Ciências da Saúde (LILACS) and Base de Datos de Enfermería (BDENF).

The search in the Grey Literature was conducted in Google Scholar, the European Society for Medical Oncology (ESMO) and ProQuest. In Google Scholar, the results were tracked according to the previously established time and thematic criteria and subsequently refined during the screening and eligibility stages. Searches targeted at identifying academic literature and technical documents related to the topic were made on the ProQuest platform. The complete search strategies used in each database are available as Supplementary Material and in the OSF repository, at the following link: https://osf.io/u2pdz/overview.

The search strategy was applied on May 15th, 2025, in various scientific databases with the intention of identifying primary studies and relevant reviews on using digital technologies in wound care. In addition to the traditional scientific databases, a complementary search was made in Grey Literature sources, with the objective of expanding the review scope and identifying relevant documents that may not be indexed in formal data banks. Internationally renowned platforms were consulted, including academic search mechanisms, institutional repositories and clinical guidelines databases.

Selection of the evidence sources

The references were managed in the Rayyan Systems Inc. software program. At first, 21,442 records from the databases and the Grey Literature were identified. Once the screening and eligibility stages were over, 30 studies comprised the final sample of this scoping review. All the selection stages were developed independently and blindly by two reviewers, with no need to resort to a third evaluator.

Data extraction

The data extraction and organization phase was conducted independently and blindly by the same reviewers[6]. In addition to that, a standardized spreadsheet was used to collect information from the studies, such as authors, publication year, type of technology, functionalities described, clinical application setting, study objective, users/professionals involved, integration with health systems, technology maturity degree, clinical impact/main results and research gaps.

Data analysis and presentation

The results were analyzed and presented by means of a descriptive and categorical approach, in consonance with the JBI methodological recommendations, which instructs presenting findings through topics, categories or types of evidence[6]. To such end, the data extracted from the studies included were organized in a standardized matrix with variables such as type of digital technology, functionalities, target audience, clinical application environment, development stage, clinical impact and integration with health services, among others.

With that matrix as a starting point, the findings were subjected to a thematic categorization process and charts, graphs and hierarchical diagrams were prepared to ease mapping of emerging trends, gaps and patterns across the studies analyzed. That systematization not only allowed identifying the diversity of technologies applied in wound care but also highlighting their different maturity and clinical effectiveness evidence levels.

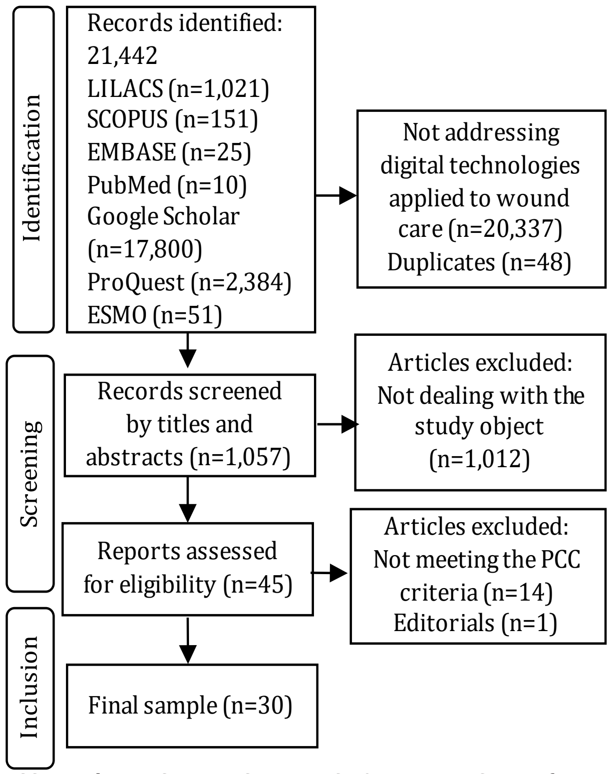
As recommended by the JBI, the methodological quality of the studies included was not subjected to a critical assessment, as the objective of this type of review is to map the extension and nature of all the available evidence, not to evaluate methodological robustness of the studies[6].

Ethical aspects

Artificial Intelligence tools (specifically GPT - Open AI) were exclusively used for linguistic review and image production purposes. All the study stages (Conception, Data analysis, Interpretation of the results and Writing of the manuscript) were entirely in charge of the authors.

Results

The process followed to select the studies is presented in Figure 1. Once the identification, screening and eligibility stages were over, 30 studies were included in this scoping review. The search in the Grey Literature contributed substantial material to comprise the initial corpus, especially via Google Scholar and the ProQuest platform.



PCC: Population, Concept, Context; ESMO: European Society for Medical Oncology

Figure 1 – PRISMA flowchart showing the process to select the studies Fortaleza, CE, Brazil, 2025

The current scoping review included 30 studies that used different types of digital technologies applied to wound care. Analyzing digital technologies applied to wound care requires broad understanding of variables that influence their development, applicability and clinical impact. Figure 2 gathers essential information organized according to authors, users/professionals involved, integration level with health systems, maturity degree of the technologies, clinical impacts and gaps pointed out in the literature.

Authors	Users/ Professionals involved	Integration with health systems	Technology maturity degree	Clinical impact/ Main results	Gaps
Liu et al[2]	Researchers and health professionals	Still under discussion, not standardized	Variable: from initial-stage technologies to more advanced ones, according to the studies analyzed	Diagnostic support, treatment customization and advances in healing prediction	Need for methodological standardization and multicenter studies
Dege et al[5]	Patients	Not reported	Variables	Diversity of functionalities and variable quality	Many apps lack clinical validation
Jiménez et al[8]	Indirect patients; technical focus	Not applicable	Variable; it depends on the study included	Support potential for clinical decision-making	Limited standardization across Artificial Intelligence methods
Bai et al[9]	Patients with hard-to-heal wounds	Not specified	Various stages	Partial improvements in clinical outcomes	High methodological heterogeneity
Anisuzzaman et al[10]	Developers, health professionals	Limited	Prototyping and initial validation processes	Potential for automation and time saving	Low standardization across algorithms
Morafifar et al[11]	Biomedical engineers and researchers	Not applied	In experimental development and prototyping phase	Therapeutic potential with controlled drug release	Scarcity of clinical studies and little acceptance among health professionals
Tambella et al[12]	Health professionals	No	Experimental technical validation	Fewer measuring errors	Applied in real patients
Howell et al[13]	Wound specialists and technical evaluators	Not mentioned	Experimentally assessed prototype	Clinical viability and accuracy assessment	Validation in real clinical settings
Gagnon et al[14]	Newly graduated nurses	Not mentioned	Tested functional prototype	Improved self-confidence and care organization	Test with other profiles and contexts
Comino-Sanz et al[15]	Nurses and patients	Partial	Field-tested functional application	More precise wound follow-up	Increase number of cases and use sites
Wynn et al[16]	British wound specialists (nurses, podiatrists)	Not specified	Existing applications with limited use	Low adherence and multiple institutional barriers	Institutional integration and professional acceptance
Wang et al[17]	Diabetic patients	Not reported	Tested functional prototyping	Systematic healing recording and evaluation	Validation in real clinical settings
Matilla et al[18]	Multiprofessional team and patient	Yes	Validated functional application	Amputation prevention with digital tracking	Reproducible in other population groups and contexts
Kivity et al[19]	Clinical team and patients with wounds	Yes	In clinical use	Adherence, effective tracking and improved healing	Prospective studies are lacking
Nair[20]	Nurses	Not mentioned	Available commercial technology	Improved precision and productivity	Formal validation in comparative studies
Aragón-Sánchez et al[21]	Nursing professionals	Not mentioned	Free tool applied	Reliable and reproducible measurements	Application in different types of wounds
Mirani et al[22]	Biomedical researchers	Not yet applied	Laboratory/Pre-clinical tests	Real-time ongoing monitoring	Clinical validation in patients
Ehtesabi et al[23]	Engineers, researchers and clinicians	Not applicable in the current stage	Prototyping and initial development	Smartphone integration possibility for remote wound monitoring	Need for clinical validation and scalability tests
Cuddigan et al[24]	Nurses and caregivers	Designed for bedside use	Validated functional app	Improved recording and decision-making support	Studies on large-scale impact
Dong et al[25]	Physicians and nurses	Partial	In clinical use at hospital environments	Standardized documentation and tracking	Assessment in other contexts
Au et al[26]	Nurses	Not mentioned	Commercially available app	The app reduces measuring times	Applicability in other contexts

(the Figure 2 continue in the next page...)

Authors	Users/ Professionals involved	Integration with health systems	Technology maturity degree	Clinical impact/ Main results	Gaps
Marengo et al[27]	Health professionals, patients and managers	Yes, with a focus on incorporating the technologies to primary care routines	Apps already in use or in practical implementation phase	Contributions to care organization, expanding access and efficient use of mobile technologies	Lack of specific evidence about direct impacts on wound care
Shamloul et al[28]	Health professionals and patients	Partial	Apps available in the market and in practical use	Improved documentation and remote wound monitoring	Absence of randomized clinical studies
Zoppo et al[29]	Health professionals	Not specified	Preliminary clinical validation	Promising results in terms of measurement reliability	Large-scale longitudinal studies
Gagnon et al[30]	Nurses	Not applicable	Baseline stage review	Expected synthesis about functionalities	Lack of consolidated data in the literature
Wu et al[31]	Not reported	Not integrated	Pre-clinical stage	Potential to detect and release medications	No clinical tests on humans
Baseman et al[32]	Researchers and clinicians	Partially described	Exploratory phase	Diagnostic and monitoring potential	Need for solid clinical validation
Asiabar[33]	Primary Health Care professionals	True potential, but limited in the studies	Variable (from field use to prototypes)	Efficiency, education, improved communication	Scarcity of studies in developing countries
Klotz; Kurmis[34]	Adults with scars	No	Functional app undergoing tests	High inter-observer reliability	Tests with larger samples
Lazarou et al[35]	Patients with diabetic foot	Partial	Prototypes and devices in clinical tests	Early detection and improved outcomes	Controlled clinical and cost-effectiveness studies

Figure 2 – Characterization of the studies as for professionals or users involved, maturity degree of the technologies, their integration level with health systems, clinical impacts described and gaps pointed out in the literature. Fortaleza, CE, Brazil, 2025

Regarding methodological approaches, predominance of evidence synthesis studies was noticed, including systematic, scoping and narrative reviews targeted at consolidating knowledge about the applicability of digital technologies in wound care[2,5,8-11,23,28,30,32-33,35]. A significant percentage of the scientific production was focused on the development and validation of technologies, such as apps, Artificial Intelligence algorithms and digital devices, with emphasis on assessing accuracy, reliability and technical performance[12-13,21,24-26,29,31]. The research studies targeted at the clinical application of these technologies were less frequent and included assessments in real use contexts, with a focus on the impacts exerted on care follows and clinical performance[19-20,34]. In addition to that, a research study centered on users and implementation was identified, addressing perceptions, barriers and acceptability among health professionals[16]. Finally, part of the findings corresponded to emerging productions, including case reports, methodological protocols and conceptual analyses, reflecting the fact that this field is still under development[18,27,30].

As shown in Figure 3, the articles were grouped by type of technology, revealing predominance of mobile apps, which represented the highest proportion of the studies analyzed. These apps were employed for various purposes, such as measuring wound areas, enabling photo documentation, monitoring clinical evolutions and supporting professional decision-making.

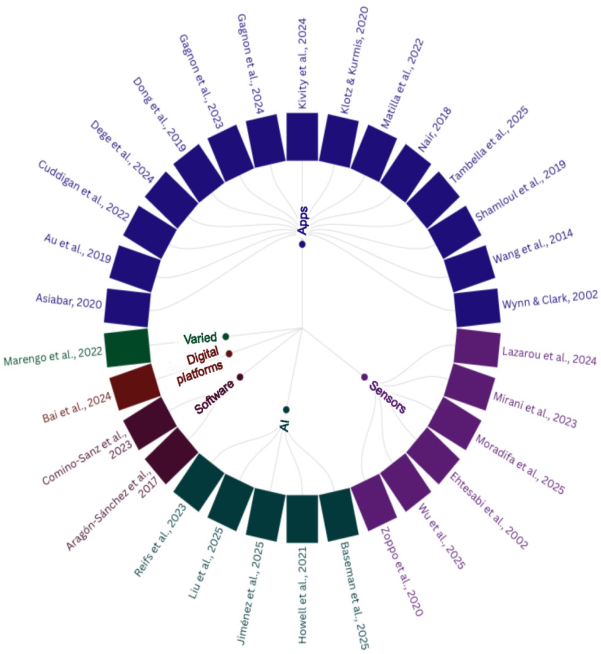


Figure 3 – Radial visual scheme of the studies included according to type of technology and authors/year. Fortaleza, CE, Brazil, 2025

Figure 4 – Hierarchical representation showing all 30 studies included, organized into three levels: Center – Main function of the technology; Middle – Clinical application context; External – Authors/Year. Fortaleza, CE, Brazil, 2025

In addition to apps, AI-based technologies also stood out, mainly applied in automated assessments of hard-to-heal wounds and in tissue classification by means of clinical images. In a lower proportion, studies that used intelligent sensors integrated to dressings or portable devices for physiological monitoring were identified, in addition to specific software programs, digital platforms and technologies categorized as "Varied".

The studies included in the review were graphically organized according to the main functionalities of the digital technologies applied to wound care, to the clinical use contexts and to the respective authors. The analysis showed that the most frequent functionality was wound measurement, encompassing technologies targeted at tissue classification, digital measuring, imaging analyses and clinical decision-making support. These solutions were predominantly applied in outpatient contexts, specialized clinics and, to a lower extent, in hospitals and primary care settings[(2,13,19)], as shown in Figure 4.

Another widely mapped functionality was wound assessment, especially automated calculations of the injured area by means and mobile apps and software programs. This group includes technologies applied in outpatient services, medical offices and wound clinics[(12,20,21)]. The technologies targeted at continuous healing monitoring (oftentimes integrated into intelligent sensors or technological dressings) also stood out and were mostly applied in home, hospital and laboratory contexts[(22-23)].

Functionalities related to prevention and to structured clinical recording were also identified, including technologies that offer care protocols, risk screening and data systematization. Applications in primary care and hospital environments were common[(24-25)]. In addition to that, some studies described how apps focused on treatments and self-care were used, extending the role of the technologies even to patients and home environments[(9,14)].

Some of the studies reviewed presented particularly different findings. One of the studies[18] reported a clinical case where using a digital app directly contributed to avoiding an amputation in a diabetic patient, illustrating a concrete clinical impact. In turn, some studies[8,12] stood out for validating algorithms and apps with precision levels comparable to those of human specialists, evidencing substitution or qualified support potential for clinical decision-making. As for maturity degrees across the technologies, the results varied from initial-stage prototypes[11,23] to consolidated clinical apps used in real situations[17,24].

Discussion

The apps developed for wound care present varied and complementary functionalities, with clinical documentation of lesions, tissue classification, assisting in dressing choices and healing evolution monitoring standing out. Tools such as Swift Skin and Wound[26] and Wound Care Log[25] proved to be relevant in longitudinal recording of lesions, favoring more precision in clinical documentation and communication across different care levels. In addition to that, these technologies incorporate algorithms capable of performing automatic area, perimeter and volume measurements, reducing limitations associated with manual methods and with interobserver variability.

In the tissue classification and analysis field, the advances enabled by Artificial Intelligence algorithms and computer vision stand out[8]. These models reached high accuracy indices in identifying different tissues, such as granulation, necrosis and slough, in addition to allowing automatedly segmenting the contours of the lesions. Tools such as Wound Viewer[29] and AI-based platforms[10] showed potential to automate some clinical evaluation stages and to provide objective parameters for supporting therapeutic decision-making. Unlike previous reviews solely focused on describing the tools, the findings obtained in this paper evidence a progressive transition between exclusively experimental technologies and solutions already incorporated to real clinical contexts, especially in applications targeted at remote wound measurement and monitoring.

Another aspect identified refers to supporting dressing choices and standardization of clinical actions[13,30]. Some apps include algorithms based on international guidelines that relate clinical characteristics inherent to wounds (such as exudate, depth and infection signs) to the most adequate dressings[2,15,17-18]. In addition to that, certain platforms present illustrated educational resources and glossaries[5,18], contributing to professional qualification and to supporting evidence-based clinical practice.

As for remote monitoring, the progress made in relation to intelligent dressings equipped with colorimetric, electrochemical and temperature sensors stands out. These devices can record physiological parameters in real time, such as pH, oxygenation and blood glucose in exudate[22,31]. They present potential for early detection of complications, continuous healing monitoring and expansion regarding home-based assistance and Primary Health Care.

All the evidence analyzed indicates relevant clinical and operational benefits. Digital measuring apps and Artificial Intelligence algorithms presented higher diagnostic precision when compared to traditional methods[8,12]. The imitoMeasure app reached an approximate mean metrological error of 2%[12], whereas Swift Skin and Wound reduced by 57% the time required to measure lesions[26]. In addition to that, computer vision algorithms reached over 85% accuracy in tissue classification[8], a value close to the performance expected from specialists. Some studies also reported fewer in-person visits, clinical follow-up optimization and potential improvements in healing outcomes[9,19]. These findings reinforce the fact that digital technologies are not merely limited to computerizing care; they can directly contribute to better clinical traceability, assistance standardization and support for decision-making based on objective data.

Despite the progress witnessed, important challenges persist related to large-scale validation, interoperability with health information systems and ethical issues associated with data privacy and safety[8,32]. Low integration with electronic medical records and institutional systems still represents one of the main barriers for sustainably incorporating these tools to routine clinical practices, especially in Public Health systems.

In the Primary Health Care context, the studies identified four major groups of digital solutions: Mobile apps to record and analyze images; AI-based decision-making support algorithms; Intelligent dressings; and Telemonitoring platforms. Functionalities related to standardized documentation, automated tissue classification, dressing recommendations and remote monitoring proved to be particularly relevant for this scenario[15,30]. The findings detected in this review reinforce the potential of these technologies to expand access to specialized care, particularly in areas with scarcity of professionals specializing in Stomatherapy and advanced wound care.

The results also show that some technologies already present higher maturity degrees for immediate clinical implementation, especially those targeted at digital wound measurement, such as Swift Skin and Wound and ImageJ[21]. On the other hand, emerging technologies such as intelligent dressings with sensors[22,29] and algorithms integrated into electronic medical records still require regulation, multicenter studies, methodological standardization and cost-effectiveness assessments. This heterogeneity in terms of technological maturity evidences that the field is still undergoing a consolidation process, with simultaneous presence of extensively applicable solutions and predominantly experimental technologies.

Based on the functional clusters identified, some critical gaps become evident. For example: intelligent sensors for ongoing monitoring are not yet validated in low-resources contexts such as Primary Health Care, where structural and connectivity limitations remain relevant[2]. In addition to that, scarcity of studies targeted at self-care among patients with wounds was noticed, as well as limited exploration regarding usability of these tools in aged populations, people with low digital literacy levels and individuals living in rural areas[19]. Another underexplored aspect refers to assessing acceptability of these technologies among health professionals and the impact exerted by these tools on workload and organization of the services.

For Collective Health, the findings indicate the need for implementation strategies that contemplate adequate technological infrastructure, integration to nationwide information systems and training of health teams. Incorporating these tools to the Unified Health System not only requires technological availability but also public policies targeted at interoperability, digital governance, technological inclusion and operational sustainability.

Although important progress has been made in the development of digital technologies applied to wound care, gaps still persist in relation to representativeness of the types of wounds and population profiles included. Most of the studies focus on pressure ulcers and on wounds of a vascular or diabetic etiology, with scarcity of surveys involving oncological, traumatic or post-operative ones. In addition to that, vulnerable population groups such as older adults with cognitive impairments, street people and rural communities remain under-represented[5,9,33]. This thematic concentration limits extrapolation of the results and shows that a significant percentage of the technologies are still validated in relatively controlled and scarcely varied clinical scenarios.

Despite the progress already described, there are still few robust clinical studies assessing the effectiveness of these technologies in real care contexts, especially Primary Health Care. There are still gaps related to standardization of the validation methods, interoperability with health information systems and evaluation of the longitudinal impact on clinical outcomes and assistance-related costs. The absence of multicenter studies and robust economic assessments hinders consolidating evidence capable of sustaining broad policies targeted at incorporating health technologies.

Another critical aspect refers to limited integration between the technologies and public health systems, particularly in Primary Health Care. Aspects related to connectivity in remote areas, integration with electronic medical records and adapting the tools to the SUS operational reality still remain underexplored[28]. In addition to that, it was noticed that many studies remained focused on the technical performance evidenced by the tools, with shallower analyses about sustainability, large-scale implementation and organizational impacts on health services.

In general, the findings evidence broad functional and contextual diversity in the digital tools applied to wound care. The predominance of studies targeted at assessments and measurements shows an increasing integration trend across diagnostic tools, automated algorithms and remote monitoring. Systematization of the technologies according to functionalities, technological maturity, integration to health systems and clinical applicability stands out as an additional contribution made by this review, allowing for a more encompassing view about the current stage of digital health applied to wound care.

Study limitations

This review presents limitations inherent to the method itself, such as not having made a critical assessment regarding the methodological quality of the studies included. The predominance of observational designs and narrative reviews may have limited the strength of all the evidence synthesized. In addition to that, the search was restricted to three languages, which may have excluded relevant productions in others. The heterogeneity found in terms of clinical contexts, types of technology and validation methods also represents a limitation to comparability of the findings and generalization of the results.

Contributions to practice

The findings offer relevant insights for a qualified incorporation of digital technologies into wound care, especially in terms of strengthening the Nursing practice in Primary Health Care. Understanding the functionalities, maturity levels and clinical impacts of these tools may guide managers and professionals in selecting solutions more in consonance with local realities In addition to that, the synthesized data may ground training processes, support the development of digital clinical protocols and foster public policies targeted at health innovations.

Conclusion

The main digital technologies applied to wound care were as follows: mobile apps, Artificial Intelligence algorithms, digital platforms and intelligent dressings, all mainly used for measurement and clinical documentation of lesions, tissue classification, healing monitoring and clinical decision-making support.

Authors' contributions

Conception and design or data analysis and interpretation; Drafting of the manuscript or critical review of its intellectual content; Final approval of the version to be published; Agreement to be accountable for all aspects of the manuscript related to accuracy or integrity being investigated and resolved appropriately: **Monteiro TA, Silva AL, Farias IL, Marcelino JS, Gubert FA, Cavalcante VMV, Coelho MMF**.

Data availability

The entire dataset supporting the results obtained in this study are available in the body of the article itself. The complete search strategies used in the databases can be accessed at https://osf.io/u2pdz/overview.

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