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REVIEW

Educational technologies for pressure injury prevention in Latin America

Tecnologías educativas para la prevención de lesiones por presión en América Latina

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ABSTRACT

Pressure injuries remain frequent in hospitals, and educating staff, students and caregivers is a core prevention measure. This narrative review mapped digital and game-based educational technologies for pressure injury prevention developed, validated or evaluated in Latin America between 2013 and 2025, and summarised the evidence of learning or clinical effect they report. The review included 29 studies, 26 of them from Brazil and one each from Argentina, Colombia and Peru. They described 11 online courses or web resources, 11 apps, 4 games and 3 videos. Development or expert validation was the only content reported in 16 studies, 3 reported usability, 4 reported satisfaction or perceived impact, 4 measured knowledge before and after the intervention, and 2 reported a clinical indicator. No study used a concurrent control group. Knowledge scores rose in the four pre-post studies, although one reported no change in lesion assessment items, and the clinical results diverged, with a non-significant fall in injury occurrence in a Brazilian online course and a larger fall in an Argentine multicomponent programme that included a smartphone app. Latin American work on this topic is abundant in development and content validation and scarce in controlled evaluation. Future studies should measure injury incidence or practice compliance against a comparison group.

Keywords: pressure ulcer; educational technology; serious games; nursing education; Latin America.

RESUMEN

Las lesiones por presión siguen siendo frecuentes en los hospitales, y educar a profesionales, estudiantes y cuidadores es una medida central de prevención. Esta revisión narrativa mapeó las tecnologías educativas digitales y basadas en juegos para prevenir lesiones por presión desarrolladas, validadas o evaluadas en América Latina entre 2013 y 2025, y resumió la evidencia de efecto comunicada. La revisión incluyó 29 estudios, 26 de ellos de Brasil y uno de Argentina, de Colombia y de Perú. Incluyeron 11 cursos en línea o recursos web, 11 aplicaciones, 4 juegos y 3 videos. Informaron solo desarrollo o validación por expertos 16 estudios, 3 informaron usabilidad, 4 informaron satisfacción o impacto percibido, 4 midieron el conocimiento antes y después de la intervención y 2 informaron un indicador clínico. Ningún estudio empleó un grupo control concurrente. Los puntajes de conocimiento aumentaron en los cuatro estudios antes-después, salvo en la evaluación de lesiones de uno, y los resultados clínicos divergieron: una disminución no significativa de lesiones tras un curso en línea brasileño y una mayor en un programa multicomponente argentino con aplicación móvil. La producción latinoamericana abunda en desarrollo y validación y escasea en evaluación controlada. Los estudios futuros deberían medir incidencia de lesiones o cumplimiento de prácticas frente a un grupo de comparación.

Palabras clave: úlcera por presión; tecnología educacional; juegos serios; educación en enfermería; América Latina.

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INTRODUCTION

Pressure injuries are a frequent and costly adverse event. A meta-analysis of hospitalised adults pooled a prevalence of 12.8% (95% CI 11.8-13.9%) and a hospital-acquired rate of 8.4% (95% CI 7.6-9.3%),(1) and a simulation model estimated that hospital-acquired pressure injuries could cost United States hospitals more than 26.8 billion dollars.(2) A multicentre cross-sectional study in Brazilian hospitals recorded a prevalence of 16.9%, and malnutrition was associated with the presence and severity of the lesions.(3) Prevention depends on what nurses, relatives and patients know and do at the bedside, yet a Cochrane review of staff education found only five randomised trials and remained uncertain about its effect on knowledge.(4)

Digital and game-based formats are attractive for this task because they can be repeated, standardised and delivered outside the classroom. A meta-analysis of randomised trials of digital serious games in nursing education reported gains in knowledge, confidence and performance,(5) and a systematic review of digital education in chronic wound management found that digital teaching outperformed no intervention while blended teaching outperformed digital teaching alone, with mostly high or unclear risk of bias.(6) Pressure injury prevention has already been taught through a serious game for relatives,(7) virtual reality simulation (8) and projected augmented reality.(9) In Latin America, and above all in Brazil, nursing groups have built apps, online courses, escape rooms and videos, and Brazilian reviews have catalogued technologies and apps for pressure injury care.(10-13)

In the Brazilian literature the term educational technology (tecnologia educacional or educativa) also covers leaflets, booklets and posters, so a digital or game-based filter is needed to compare like with like. Those reviews cover clinical technologies or assessment apps, and the searches for this review did not identify a regional synthesis restricted to educational technologies and to what they achieved. The objective of this narrative review was to map the digital and game-based educational technologies for pressure injury prevention developed, validated or evaluated in Latin America between 2013 and 2025, and to summarise the evidence of learning or clinical effect they report. Three questions guided the synthesis: which technologies exist and for whom, how they were developed and validated, and what learning or clinical effect they reported.

DEVELOPMENT

The review included 29 studies published between 2016 and 2025. Of these, 26 were set in Brazil, and one each in Argentina,(15) Colombia (16) and Peru.(17) Publications up to 2019 numbered 7, against 22 from 2020 onwards, including 6 in 2025. The technologies amounted to 11 online courses or web resources, 11 apps, 4 games and 3 videos. The audience was 22 studies of practising professionals or unspecified users, 3 of nursing students and 4 of caregivers, relatives or patients. None had a concurrent control group.

The level of evaluation was low for most technologies. Development or description alone accounted for 7 studies and expert or target-audience validation for 9, together 16 of 29. Usability or technical performance was reported in 3, satisfaction or perceived impact in 4, knowledge before and after the intervention in 4, and a clinical indicator in 2. Apps clustered at the development and validation levels (8 of 11), whereas the four games clustered at perceived impact (3 of 4) (Table 1).

The formats appeared in sequence. Online courses were the earliest, with 6 of the 11 dated up to 2020.(18-23)Apps spanned 2017 to 2024.(15,24) Games and videos appeared later, the four games between 2022 and 2025 and the three videos in 2023 and 2025.(25-28)With this, 16 of the 29 studies were published in the last three years of the window.

Table 1. Included studies by technology type and level of evaluation.

Technology type	Description only	Validation	Usability	Perceived impact	Knowledge	Clinical	Total
Web	2	3	1	1	3	1	11
App	4	4	2	0	0	1	11
Game	0	0	0	3	1	0	4
Video	1	2	0	0	0	0	3
All types	7	9	3	4	4	2	29

Note: Cells are numbers of studies. Each study is counted once, at its highest reported level of evaluation among the six listed. Web includes online courses, virtual learning environments, websites and one blended programme.

Development frameworks were named but varied. Contextualized instructional design guided two apps,(29,30) and the DADI, Design Thinking, Pressman prototyping, Cook and Dupras, and Design Science frameworks were each used once.(24,31-34)An integrative literature review supplied the content of four technologies.(35-38)Content validity indices were the commonest validation instrument, reported in five studies.(24,28,36-38)The Suitability Assessment of Materials was applied in two studies,(28,30) and the System Usability Scale in two.(34,39)

Caregivers, relatives and patients were the audience of four technologies: LPPrev for caregivers of older adults,(30)the PreventPele website,(37)the video for relatives(38)and the ColaborAtiva platform for wheelchair users.(34)Three targeted nursing students: the assessment app used in simulated teaching,(39)the escape room(40)and the neonatal video.(28)Five technologies were set in intensive care units.(15,21,26,27,41)Content ranged from staging and identification in adults(42)to risk scales in children, namely Braden QD and Glamorgan,(24,33) and from repositioning reminders and nutritional records(30)to nutritional treatment.(37)

A distance continuing education programme hosted in Moodle was built in four stages, and its ergonomic and pedagogical evaluation by 10 informatics and 11 pressure injury specialists was satisfactory.(18)A free-software virtual learning environment with seven modules received a positive appraisal from a panel of judges.(43)A platform based on problem situations, organised in six teaching steps with a discussion forum and post-test, was described without outcome data.(23)A website for health professionals was developed with the DADI method, and the report documents the process only.(31)The PreventPele website for patients, relatives and caregivers was validated by 12 judges, with 95.2% agreement and an overall content validity index of 1.(37)A multimedia virtual assistance system in Peru worked with an efficiency of 92.04%.(17)

Knowledge was measured in three online or blended programmes. Among 95 nurses in Brazil, correct answers rose from 78.8% to 88.8% ($p < 0.001$) after a blended programme built on the Maguerez arch.(22)Among 21 nurses in Colombia, eight virtual modules raised mean knowledge from 76% to 93%.(16)Among 9 intensive care nurses, an online course raised correct answers on prevention items from 78.5% to 81.9% and on staging items from 86.6% to 93.2%, and answers on lesion assessment did not differ.(21)In turn, 97 nurses who completed an online training rated its impact on work at 7.05 ± 1.60 and the support for transfer to practice at 5.82 ± 1.45.(20)

The instruments behind these knowledge scores differed. The Brazilian blended programme used the Pieper knowledge test,(22)the intensive care course used items on prevention, staging and assessment,(21)and the Colombian modules covered skin anatomy and assessment, definitions, classification, prevention and initial treatment.(16)The escape room for students was built on the escapED framework, played in a simulation laboratory with a high-fidelity manikin and followed by a structured debriefing.(40)With this, all four knowledge studies used a pre-post comparison, and none reported a comparison group.

Sample sizes were small. Where abstracts gave them, studies enrolled between 5 and 97 participants per group or panel, with 9, 11 and 21 participants in three of the four knowledge studies.(16,21,40)Only two studies enrolled patients, 47 per phase in one and 55 before and 69 after in the other.(15,19) Such sizes can reveal a large pre-post difference but leave little room to estimate a clinical effect.

One online course was linked to a clinical indicator. In a before-after study with 47 patients per phase, pressure injury occurrence amounted to 53.2% before and 42.6% after the course ($p = 0.500$), while risk assessment and skin description at admission showed higher figures after it.(19) Table 2 gathers the studies that measured knowledge or a clinical indicator (Table 2).

Across online and blended formats, the evidence differs in strength more than in direction. Three of the 11 studies measured knowledge, one a clinical indicator, one perceived impact and one technical performance, and five described or validated the product. The largest knowledge gain was reported in Colombia (17 percentage points), against 10 points in the Brazilian blended programme and 3.4 points in the intensive care course.(16,21,22)The single clinical indicator did not differ significantly between phases.(19)

The 11 apps were as numerous as the web resources. Their development drew on literature reviews and instructional design,(29)and the SickSeg app reached 100 screens and was tested on 2 notebooks, 6 smartphones and 2 tablets, which exposed 5 faults that were then corrected.(35)The Sem Pressão app, with seven tabs, was reviewed by 6 health professionals and 3 stomal therapists.(42)Twelve nurses rated the Lesão por Pressão-App, and the content validity index rose from a range of 0.83 to 1.0 to 1.0 after corrections.(36)The LPPrev app for caregivers of older adults, which includes repositioning reminders, reached 96.6% agreement among 7 teaching nurses.(30)

Table 2. Studies reporting knowledge or clinical outcomes.

Study	Country	Technology	Participants	Design	Main result
(22)	Brazil	Blended programme	95 nurses	Single group, before-after	78.8% to 88.8% (p < 0.001)
(16)	Colombia	Eight virtual modules	21 nurses	Single group, before-after	76% to 93%
(21)	Brazil	Online course	9 nurses	Before-after	Prevention 78.5% to 81.9%
(40)	Brazil	Escape room	11 students	Before-after	Knowledge p = 0.001; confidence p = 0.015
(19)	Brazil	Online course	47 patients per phase	Before-after	PI 53.2% to 42.6% (p = 0.500)
(15)	Argentina	Programme with smartphone app	55 before, 69 after	Before-after	PU 75% to 54% (p < 0.05)

Note: Values are those reported in the abstracts. Knowledge is the mean percentage of correct answers. PI = pressure injury; PU = pressure ulcer.

Paediatric and prototype apps followed the same path. DERMAPED, which delivers the Braden QD scale, obtained an overall content validity index of 0.96 in the first Delphi round.(24)An app based on the Glamorgan scale was developed with five tabs and no evaluation data,(33)and the LPPENFcare prototype was described through Pressman's prototyping stages.(32) Students who used an assessment app in simulated teaching rated usability as good in 44.44% and excellent in 48.88% of scores.(39)

Free distribution was stated for five technologies. SickSeg was released at no cost in the Play Store,(35)Sem Pressão and DERMAPED were offered as free downloads,(24,42) the introductory virtual learning environment was built with free software,(43)and PreventPele gives open access to validated information.(37)None of the abstracts described a plan to update content or maintain the software.

The two apps with the strongest user or clinical data differed in design. ColaborAtiva, a gamified collaborative platform for wheelchair users, was tested by 16 users, scored 73.28 on the System Usability Scale and obtained a net promoter score of 62.5%.(34)In an Argentine intensive care unit, a quality programme combined an educational session, a checklist, a smartphone app for lesion monitoring and a family bundle, and pressure ulcer incidence fell from 41 of 55 patients (75%) to 37 of 69 (54%).(15)Advanced-grade ulcers fell from 49% to 10%, and family participation rose from 9% to 57% (all p < 0.05).(15)

Apps formed the largest group and had the thinnest outcome record. Eight of the 11 stopped at description or expert validation, two reached usability testing, and one, the Argentine programme, reported a clinical indicator in a bundle where the app was one of four components. No app was tested for knowledge or for change in behaviour, and none compared users with non-users. Validation indices were uniformly high, from 0.83 to 1.0 for content validity in one app and 96.6% agreement in another.(30,36)

Four games were reported, and none was described as a digital platform in its abstract. An escape room in intensive care units reached 59 staff members, a participation of 44.36% of the workforce, and all participants escaped within the stipulated time.(41)In another escape room, 57 of 82 professionals (69.5%) solved the puzzles and satisfaction was high.(25)Among 11 nursing students, an escape room was followed by higher knowledge (p = 0.001) and self-reported confidence (p = 0.015), while stress did not change.(40)A question game built on a fictitious six-day admission was played by 5 staff members, with receptiveness and discussion as the only reported results.(26)

The games yielded participation data and reaction ratings, and only the student escape room yielded pre-post knowledge. Completion was 100% in the intensive care escape room, which reached 44.36% of the workforce, and 69.5% in the campaign that reached 82 professionals, and the student teams needed a mean of 30 minutes to escape.(25,40,41) The denominators differ, so the completion rates cannot be compared.

Three videos closed the sample. A 7 min 51 s video for nursing students on neonatal intensive care was validated by 22 judges and appraised by 8 students.(28)A video for relatives and caregivers obtained item-level content validity of 1 for most items among 9 judges and an agreement of 0.99 among 27 relatives and caregivers.(38)A 2-minute video made by an intensive care team with phone editing apps was reported without evaluation.(27)

The videos were validated for content and appearance but not tested for learning. Judges numbered 22 and 9, target-audience raters 8 and 27, and the running time ranged from 2 minutes

to 7 min 51 s.(27,28,38)

Four Brazilian reviews framed the field. An integrative review of 13 articles found technologies such as e-learning-mediated permanent education and a virtual learning environment, mostly in descriptive designs with low inference power.(10) A second integrative review kept 13 of 576 articles on mobile apps for pressure injury management and judged that most apps influenced, or could influence, assessment, prevention and treatment.(11) All 6 studies in a systematic review of apps for pressure ulcer identification were in an initial phase of development or improvement.(12) A technological prospection screened 38,394 records and kept 20 assessment apps, of which 6 (30%) identified tissue type and 35% described no privacy policy.(13)

Face-to-face strategies provided the comparison set. A high-fidelity scenario was built on Bloom's taxonomy and positively evaluated by students.(44) Among 77 nursing professionals, realistic simulation raised the Kappa agreement from 0.56 to 0.87 for coverage techniques and from 0.55 to 0.91 for sterile dressing.(45) Two simulated scenarios were validated with a scale-level content validity index above 0.80,(46) and 52 faculty and preceptors rated scenario design at 4.70 and debriefing at 4.68.(47) In a focus group, 29 students described five categories of learning about risk assessment.(48)

Several results ran against the expected direction. In a prevention training programme, the learning score rose from 7.99 to 8.45 ($p < 0.0001$), yet audited compliance with prevention measures fell from 65.1% to 56.2%.(49)Stress did not change after the escape room, lesion assessment items did not differ after the online course, and the fall in injury occurrence after the other online course did not reach significance.(19,21,40)No abstract reported knowledge retention after the immediate post-test or a cost estimate.

DISCUSSION

The main finding is a gap between the volume of development work and the strength of the outcome evidence. Latin American teams, almost all of them Brazilian, have produced a varied set of apps, online courses, games and videos for pressure injury prevention, but only a minority tested learning and fewer still a clinical indicator. Content validation is the usual end point, and no study compared a technology with a concurrent control. For decision makers, the record shows that these tools can be built and judged acceptable, and it does not show that they change what nurses or caregivers do at the bedside.

Knowledge gains in the pre-post studies agree in direction with international pooled estimates. E-learning programmes for pressure injury management raised nurses' knowledge with a standardised mean difference of 1.40 (95% CI 0.45-2.35; $I2 = 93.1\%$),(50)and a wider meta-analysis of training programmes for nurses found 1.23 (95% CI 0.50-1.96).(51)The rise from 78.8% to 88.8% after a blended programme in Brazil and from 76% to 93% after virtual modules in Colombia point the same way.(16,22) Wide intervals and high heterogeneity in the pooled estimates mean that the direction is better supported than the size.

Randomised and controlled studies from other regions support game and app formats. A randomised trial of an interactive e-book app among 164 nurses in Taiwan found larger gains in knowledge, attitudes and confidence than conventional education,(52)and a randomised study of 60 nursing students found higher post-test scores in the mobile application group than in the lecture group.(53)A serious game for patient relatives raised knowledge scores ($p < .001$) in 55 participants, although without a control group.(7)The Brazilian escape room that raised knowledge in 11 students is consistent with these results, but its design is a single group and its sample is small.(40)

Video and immersive formats, scarce in the Latin American record, give comparable results elsewhere. In a single-group study of 105 nurses, mean knowledge was 47.71 before training, 68.5 after in-person teaching and 72.38 after video-based training.(54)A 360-degree video virtual reality programme improved knowledge (effect size 0.90) and confidence (1.69) among 69 new nurses and showed a large effect on clinical competency relative to the control group.(55)Virtual reality simulation improved knowledge in both the experimental and the video-lecture groups of a pilot with 35 novice nurses,(8)and projected augmented reality was rated favourably by 32 students and faculty.(9)These formats could extend the Brazilian video work, which has been validated by judges but not tested for learning.

Relatives and caregivers are a second audience with international support. A serious game for relatives and digital self-management tools for people with spinal cord injury increased knowledge, awareness and confidence, although adherence to reminders remained a challenge.(7,56) The Latin American products for this audience include an app with repositioning reminders, a website,

a video and a gamified platform, and all were validated by experts.(30,34,37,38)Only the video and the platform were appraised by the people who would use them, 27 relatives and 16 wheelchair users, and their abstracts report no use at home.(34,38) Adherence data over weeks would show whether reminders change repositioning.

Clinical effects diverge more than knowledge gains. The Brazilian online course was followed by a fall in injury occurrence from 53.2% to 42.6% that did not reach significance,(19)whereas the Argentine programme recorded a fall from 75% to 54% in incidence and from 49% to 10% in advanced-grade ulcers.(15)The two interventions differ in the way that matters: the Argentine programme bundled an educational session, a checklist, a smartphone app and a family bundle, so its effect cannot be assigned to the app, and its before-after design cannot exclude secular change. The Cochrane review found only five randomised trials of staff education and was uncertain about knowledge differences,(4)and a scoping review of self-managed digital technologies for people with spinal cord injury likewise judged the direct effect on injury prevention inconclusive.(56)A review of 11 studies of educational interventions for nurses, searched in Portuguese, English, French and Spanish, was more favourable, concluding that different educational strategies can help prevent pressure injuries in hospitals, with incidence among the outcomes analysed.(57)

Knowledge and practice also diverged. In the Brazilian training programme, learning scores rose while audited compliance fell from 65.1% to 56.2%, and the authors concluded that the knowledge acquired was not transferred to clinical practice.(49)Education programmes aim to change clinical behaviour, as the Cochrane review notes, so knowledge scores are an intermediate outcome and a rise in them does not guarantee a change in practice.(4)Baselines matter as well: intensive care nurses who started at 78.5% on prevention items gained 3.4 percentage points,(21) whereas nurses in the Taiwanese trial started at 51.96% and ended at 75.5%.(52)A non-inferiority trial of a digital education hub in Belgium could not conclude non-inferiority and had a dropout of 66.25%, although the hub was considered an acceptable adjunct to lecturing.(58)The pooled estimates for serious games also disagree, with a knowledge effect of 0.75 in one meta-analysis and 0.492, with an interval crossing zero, in another.(5,59) Different instruments, baselines and trial restrictions probably explain part of this spread, and they also prevent direct comparison of the Latin American studies.

Expert agreement indices are high but measure content acceptance, not effect. Content validity reached 1.0 on reassessment for one app, 0.96 for the paediatric app and 96.6% agreement for the caregiver app,(24,30,36)and usability for the wheelchair platform scored 73.28.(34)These figures indicate acceptable content and usability, and they do not predict use in wards. The Brazilian reviews reach a similar reading: studies of pressure ulcer apps were all in an initial phase,(12)most studies of prevention technologies were descriptive,(10)and few of the assessment apps identified tissue type, none of those being available for use in Brazil.(13)

Engagement data are thin: participation in the intensive care escape room reached 44.36% of the workforce,(41)and the gamified platform for wheelchair users obtained a net promoter score of 62.5% among 16 users.(34)The gamified platform scored excellent on four scales of the User Experience Questionnaire, namely efficiency, dependability, stimulation and novelty, and good on attractiveness.(34)Without retention or repeated-use data, these figures describe the first contact with a technology rather than sustained engagement. Studies should therefore report use over time, completion and drop-out, as the Belgian trial reported its dropout.(58)

The Brazilian studies follow a technology-production pipeline: a literature review supplies the content, a team builds the product, and a small panel of judges validates it. Panels were small, with 7 judges for the caregiver app, 9 for the relatives' video, 12 for the nurses' app and the website, and 22 for the neonatal video.(28,30,36-38)The pipeline is cheap and reproducible, and several products are free,(24,35,42)but it stops before the stage at which effect is tested. The natural next step is to move validated products such as LPPrev, PreventPele and the neonatal video into pragmatic trials, with wards or units as the unit of allocation and injury incidence as the outcome.

The face-to-face comparison set follows the same pattern. Simulation scenarios were built and validated, with a scale-level content validity index above 0.80 in one study and design ratings of 4.70 in another,(46,47) and only one study measured agreement before and after in 77 professionals.(45)The programme that audited practice is the exception that matters, because it recorded a fall in compliance after a rise in knowledge.(49)The whole Latin American field, digital or not, therefore sits at the development and validation stages.

Game design is described sparsely. The escape rooms report puzzles solved within a time limit and a debriefing,(25,40,41)the question game reports a fictitious admission of six days with a question per day,(26)and the gamified platform reports collaborative practices.(34)None of the abstracts reports points, levels, feedback loops or the mechanics that a game design analysis

would need, so it is not possible to tell which element, if any, drives engagement. The international meta-analyses suggest that duration matters, since a subgroup analysis found larger knowledge gains when the intervention lasted more than two weeks,(5)and the Latin American games described single sessions.

Measurement choices limit comparison. Knowledge was expressed as percentage of correct answers,(16,21,22) as Kappa agreement,(45)as a score out of ten(49)and as a significance test alone.(40)The clinical indicator was occurrence in one study and incidence in another.(15,19) Common outcome sets with patient-level denominators would allow pooling across studies and would make small samples, such as the 9 nurses of one course, usable in later syntheses.(21)

Part of the gap reflects a research tradition. Several Brazilian studies describe themselves as methodological studies whose product is a validated technology.(30,37,38,46)In that tradition the deliverable is a content-validated product, which is a legitimate output, but it answers whether the product is acceptable and not whether it works. Reporting a second stage with the same product in the same paper or in a linked trial would close the gap without changing the tradition, and funders and journals could ask for it.

Maintenance and data protection remain open. In the survey of assessment apps, 35% described no privacy policy,(13)and none of the Latin American app abstracts reviewed here described an update plan. Tools that give care recommendations, such as repositioning reminders or staging guidance, depend on current guidelines, so a validated app can become outdated without any visible sign.(30,42) Whether recommendation engines are safe in Latin American wards has not been tested.

Regional coverage is also uneven. Brazil supplied 26 of the 29 studies, and Spanish-speaking countries are represented by a Colombian course, a Peruvian system and an Argentine programme.(15-17)The Argentine programme is the only one to combine a smartphone app with a measured clinical result, and it was published in a Brazilian intensive care journal, which suggests that Spanish-language work may be reported outside regional channels. Differences in health systems and nurse staffing may also shape which technologies are built, and the present data cannot separate those factors.

Some strengths offset these limits. Five sources were searched in three languages, scope decisions were explicit, the core studies were separated from the comparison set and the reviews, every cited identifier was checked against Crossref, and the counts in the text come from a script rather than from manual tallies. These features make the map reproducible even though the sample is not exhaustive, and they allow another team to repeat the searches and extend the sample with the theses and regional databases that were not covered here.

For services, the practical reading is cautious. Low-cost apps, videos and escape rooms can be built from local content and judged acceptable, yet no Latin American study shows that they reduce injuries, and the programme that measured knowledge and practice found knowledge rising while compliance fell.(49)A team adopting them should pair the tool with an audit of practice and a clinical indicator. For researchers, the priority is a controlled design with injury incidence or practice compliance as the primary outcome, reported with the number of participants and the instruments used.

CONCLUSIONS

The Latin American literature on digital and game-based educational technologies for pressure injury prevention is concentrated in Brazil and consists mainly of apps, online courses, games and videos aimed at nurses, students and caregivers. Most studies describe development and expert validation, and few evaluate learning or clinical effect, with no concurrent control group. Knowledge gains were consistent in direction, while clinical effects were divergent and cannot be attributed to a single technology.

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