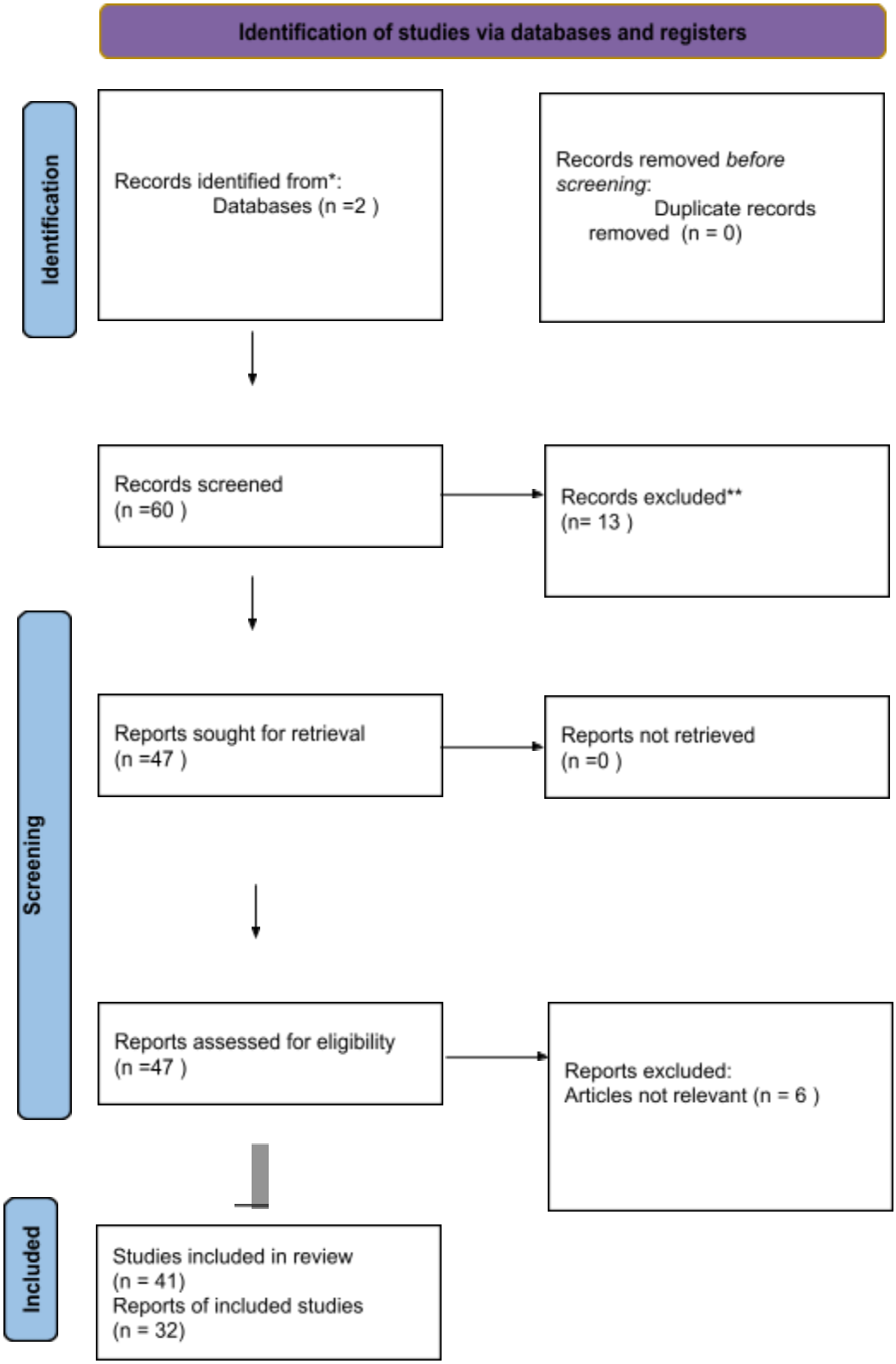
Appendix A: Study Selection Flowchart (PRISMA Diagram)



Appendix B. Detailed Search Strategy

Databases Searched:

- PubMed
- University of Phoenix Library (manual selection; specific database not identified)

Search Dates:

- March 2, 2025 – March 4, 2025

Search Strategy: PubMed

1. "Artificial intelligence triage dermatology"
2. "dermatology AND access AND teledermatology AND care AND wait times"

Search Details:

- Both searches were entered verbatim into PubMed's basic search bar.
- No controlled vocabulary (e.g., MeSH terms) or complex Boolean nesting was used.
- These phrases were selected based on their alignment with the study's PICO criteria and review objectives.

Filters Applied:

- Language: English
- Full text available

- Human studies
- Peer-reviewed articles
- Published between 2019 and 2025

Manual Selection from the University of Phoenix Library:

- 12 additional articles were selected manually using institutional access through the University of Phoenix Library.
- Boolean terms and exact search strings were not available due to database platform limitations.
- Articles were included based on alignment with the research question, addressing AI, access, wait times, or teledermatology models.

Total Results from PubMed and the University of Phoenix Library

- Total Articles Returned (Combined): 60
- Title/Abstracts Screened: 60
- Full-Text Articles Assessed: 47
- Articles excluded after full review: 6
- Included in Final Review: 41

- Articles included in study: 32 (see reference list for a comprehensive list of articles)

Appendix C. Critical Appraisal Table

This table integrates extracted study characteristics and critical appraisal results for all included studies, based on JBI criteria and aligned with the review's PICO framework.

Research Appraisal Spreadsheet

(Spreadsheet will be saved as a PDF and included)

Ref #	Article Name	Author & Date	Evidence Type	Study Design	Appraisal Tool Used	Sample/Sample size/ Setting	Study Findings that help answer EBP Question	Observerable Measures	Limitations	Evidence Level and Quality
1	The PRISMA 2020 Statement: An Updated Guideline for Reporting Systematic Reviews	Page et al. (2021)	Methodological Reporting Guideline	Reporting Standard / Guideline	Not formally appraised (reporting guideline, not a primary study)	International expert consensus; 27-item checklist with four-phase flow diagram for systematic reviews and meta-analyses	Provides the methodological framework used to structure and report this systematic review; supports transparency, replicability, and rigor in evidence synthesis. The PRISMA 2020 statement was used to guide search strategy documentation, study selection flow, data extraction, and reporting of results.	27-item checklist; PRISMA flow diagram (identification, screening, eligibility, inclusion)	Reporting guideline rather than a primary research study; does not generate empirical evidence but informs review conduct.	Not graded (methodological framework)
2	From Diagnosis to Intervention: A Review of Telemedicine's Role in Skin Cancer Care	Mashoudy et al. (2024)	Secondary, Non-Empirical	Narrative Review	JBI Text & Opinion Checklist	No original patient sample; literature review published in Archives of Dermatological Research synthesizing evidence on teledermatology across triage, diagnosis, management, and surgical consultation for skin cancer	Highlights teledermatology's role in expanding skin cancer care access in underserved areas and supports image quality and AI integration as critical factors. "Teledermatology demonstrates diagnostic accuracy rates that are often comparable to those achieved through traditional face-to-face consultations." Notes that variable reimbursement, lack of standardized imaging protocols, and digital training gaps limit equitable implementation. Identifies image quality as a key barrier affecting diagnostic confidence in teletriage workflows.	Narrative synthesis of diagnostic accuracy, patient satisfaction, and access outcomes across cited studies; no pooled statistics	Not systematic; no formal appraisal of included studies; potential selection bias; limited real-world implementation data in under-resourced settings.	Level V – Moderate quality
3	Skin Cancer Education Interventions for Primary Care Providers: A Scoping Review	Brown et al. (2022)	Secondary, Scoping Review	Scoping Review	JBI Scoping Review Checklist	54 studies; education for PCPs globally	Training improves diagnostic accuracy, self-efficacy, triage confidence. The review underscores the need for comprehensive training programs, particularly in underserved areas, to reduce skin cancer morbidity and mortality. Educational interventions might improve knowledge and even confidence to some extent, but they may not fully overcome these systemic or practical obstacles.	Diagnostic concordance; knowledge gain; behavior change	Short-term outcomes; heterogeneity; no meta-analysis	Level V – Moderate quality

Ref #	Article Name	Author & Date	Evidence Type	Study Design	Appraisal Tool Used	Sample/Sample size/ Setting	Study Findings that help answer EBP Question	Observerable Measures	Limitations	Evidence Level and Quality
4	Revolutionizing Skin Cancer Triage: The Role of Patient-Initiated Teledermoscopy	Foltz et al. (2024)	Primary, Empirical	Retrospective Observational	JBI Analytical Cross-Sectional Checklist	70 patient-submitted images; OHSU dermatology	Teledermoscopy reduced need for in-person visits by 53%; improved triage accuracy. "This technology enables dermatologists to assess the images and provide feedback without the need for an in-person visit. When combined with real-time or SAF technology, teledermoscopy can significantly improve virtual referral and triage workflow" "The recent literature has examined the utilization of smartphone dermatoscopes to aid in communication between primary care providers and dermatology providers when assessing skin lesions of concern [21–25]. These studies highlight the potential for smartphone dermatoscopes to facilitate more accurate and timely assessments, bridging the gap between primary care and specialized dermatological care."	Referral reduction from 60% to 28%; P<0.001	Small sample; image quality variability	Level III – High quality
5	Implementation and Impact of a Store-and-Forward Teledermatology Platform	Dobry et al. (2021)	Primary, Empirical	Retrospective Cohort	JBI Analytical Cross-Sectional Checklist	3,285 consults; urban safety-net health system (Medicaid-majority)	Reduced wait from 64 to 36 days; increased biopsies; 63.5% visits avoided. The intervention did shorten median wait times from 64 days to 36 days overall. However, only for specific subgroups (lesion of concern) did the wait drop below 30 days (25 days median).	Wait: 36 vs 64 days; Biopsy rate: 2.4× higher	Single system; retrospective	Level III – High quality

Ref #	Article Name	Author & Date	Evidence Type	Study Design	Appraisal Tool Used	Sample/Sample size/ Setting	Study Findings that help answer EBP Question	Observerable Measures	Limitations	Evidence Level and Quality
6	Pediatric Dermatology eConsults: Reduced Wait Times and Office Visits	Seiger et al. (2020)	Primary, Empirical	Retrospective Cohort	JBI Analytical Cross-Sectional Checklist	180 pediatric patients	54→37 days wait reduction; 53.7% FTF visits avoided; cost savings. The mean turnaround time for eConsult completion was 1.8 days (median 1.0 day), which is significantly shorter than the in-person wait time. For patients who required in-person visits after eConsult triage, the average wait time was 37.3 calendar days, which is 31% shorter than the average of 54.1 days for direct, traditional clinic referrals. However, only those with urgent recommendations for in-person evaluation after an eConsult had a wait time reduced to an average of 27.7 days (approximately four weeks), thus meeting the "<30 days" criterion for the urgent subgroup 4 5 1. The majority of eConsult cases (53.7%) completely avoided a face-to-face visit in the 90-day follow-up, meaning many patients received timely specialist input without any in-person delay.	Wait reduction: 17 days; Cost savings: $24,059	Single center; small sample	Level III – High quality
7	Artificial Intelligence vs Medical Providers in the Dermoscopic Diagnosis of Melanoma	Anderson et al. (2023)	Primary, Empirical	Diagnostic Accuracy Study	JBI Diagnostic Test Accuracy Checklist	100 dermoscopic images; 42 providers evaluated with vs. without AI support	AI outperformed providers in diagnostic accuracy and PPV; supports triage for faster diagnosis. "Looking at melanoma alone, the 5-year survival rate is greater than 99% when detected early but falls to 71% when the disease reaches the lymph nodes and 32% with metastasis to distant organs.1 Furthermore, a 2018 study found stage I melanoma patients who were treated 4 months after biopsy had a 41% increased risk of death compared with those treated within the first month.2 However, many patients are not seen by a dermatologist first for examination of suspicious skin lesions and instead are referred by a general practitioner or primary care mid-level provider. Therefore, many patients experience a longer time to diagnosis or treatment, which directly correlates with survival rate."	Sensitivity: 80%, Specificity: 95%, Accuracy: 92%, PPV: 80%, NPV: 95%	Small image sample; simulated setting; some providers lacked dermoscopy training	Level II – Moderate to High quality
8	Human–Computer Collaboration for Skin Cancer Recognition	Tschandl et al. (2020)	Primary, Empirical	Prospective Reader Study	JBI Diagnostic Test Accuracy Checklist	511 cases, 12 international dermoscopists; 7 AI models with and without clinician input	Human-AI collaboration outperformed AI alone; best performance with top 3 model plus reader.	AUC up to 0.96 (collaborative); top-1 accuracy improved significantly	Lab-based environment; no biopsy for all cases; high reliance on image quality	Level II – High quality

Ref #	Article Name	Author & Date	Evidence Type	Study Design	Appraisal Tool Used	Sample/Sample size/ Setting	Study Findings that help answer EBP Question	Observerable Measures	Limitations	Evidence Level and Quality
9	Using Deep Learning for Dermatologist-Level Detection of Suspicious Pigmented Lesions from Wide-Field Images	Soenksen et al. (2021)	Primary, Empirical	Diagnostic Accuracy Study	JBI Diagnostic Test Accuracy Checklist	38,283 images; 133 patients (Madrid hospital and public sources); 135 wide-field images used for clinical ranking validation	Deep learning model (VGG16) achieved high accuracy in triaging pigmented lesions using consumer-grade wide-field images. "In the United States, for example, there are less than 12,000 practicing dermatologists (49), and with fewer than 15 visits per 100 individuals annually (50), it is expected that most dermatology practices across the nation are already too saturated and time-constrained to provide additional screening for melanoma" "Unlike dermatologists, primary care physicians such as family practitioners and internists already attend to about 330 million patients per year in the United States (50). These substantial coverage rates place primary care providers in a prime position to execute meaningful melanoma screening programs in large cohorts of patients"	Sensitivity: 90.3%, Specificity: 89.9%, Accuracy: 86.56%, AUC (SPL): 0.945; 82.96% agreement with dermatology consensus	No biopsy confirmation; real-world clinical validation limited; device/camera variability untested	Level II – High quality
10	The Majority of Skin Lesions in Pediatric Primary Care Can Be Managed by Teledermatology	Giavina Bianchi et al. (2019)	Primary, Empirical	Retrospective Descriptive Study	JBI Analytical Cross-Sectional Checklist	733 lesions (São Paulo, Brazil); teledermatology triage tool	72.1% of cases managed without in-person dermatology; improved access, avoided unnecessary referrals. Analyzing 10,126 lesions from 6,879 patients, the research found that 63% of lesions could be managed without in-person dermatologist visits, significantly reducing waiting times from 6.7 months to 1.5 months (78% reduction). Teledermatology facilitated 62% of patients remaining under primary care, with only 37% referred to dermatologists and 1% to biopsy.	% managed via teledermatology; % needing in-person referral	Regional data; no biopsy confirmation; provider bias	Level III – High quality

Ref #	Article Name	Author & Date	Evidence Type	Study Design	Appraisal Tool Used	Sample/Sample size/ Setting	Study Findings that help answer EBP Question	Observerable Measures	Limitations	Evidence Level and Quality
11	Melanoma Detection by Non-Specialists: An Untapped Potential for Triage?	Cantisani et al. (2022)	Primary, Empirical	Diagnostic Accuracy / Inter-Rater Agreement Study	JBI Diagnostic Test Accuracy Checklist	50 patients undergoing total body scans with VIDIX 4.0 video dermatoscope; outpatient dermatology clinic, Sapienza University, Rome; non-specialist (medical student after one-month dermoscopy training) vs. expert dermatologist	High concordance between non-specialist and dermatologist supports task-shifting and triage potential of trained non-specialists with dermoscopic tools. "The agreement between the expert and the non-specialist was 87.75% (κ = 0.65) regarding the assessment of clinical significance." Concordance for ABCD rule parameters: asymmetry 79.9% (κ = 0.59), borders 74.4% (κ = 0.50), color 81.4% (κ = 0.57), diameter 89.9% (κ = 0.77); Ugly Duckling Sign 96.9% (κ = 0.83). Authors conclude AI-based diagnostic tools may further enable inclusion of non-specialist doctors in melanoma screening as an untapped potential for efficient, more widely available triage.	Overall agreement: 87.75% (κ = 0.65); ABCD parameter κ range: 0.50–0.77; Ugly Duckling κ = 0.83	Small sample (50 patients); single-center; single non-specialist and single expert (limits generalizability); no histological confirmation reported for all lesions; brief training period for non-specialist.	Level III – Moderate quality
12	It's Not the Task, It's the Shifting: Perspectives on Task Shifting in Emergency Departments	Saga et al. (2024)	Primary, Qualitative	Descriptive Qualitative Study	JBI Checklist for Qualitative Research	10 interviews with physicians and leaders in Norway EDs	Task shifting to nurses seen as viable with proper training, culture, and leadership support. The document emphasizes that for task shifting to reliably reduce waiting times and enhance patient experience—including in medical fields such as dermatology—the following must be in place: • Well-defined training programs to ensure registered nurses or other non-physicians are competent and confident in performing the tasks. • Supportive team structures to ensure coordination and reduce risks associated with fragmented care.	Thematic coding: feasibility, barriers, enablers	Small sample; not dermatology-focused	Level V – Moderate quality
13	The Use of AI for Skin Disease Diagnosis in Primary Care Settings	Escalé-Besa et al. (2024)	Secondary, Systematic	Systematic Review	JBI Systematic Review Checklist	15 primary studies (2019–2022); mostly US, Europe; diagnostic test accuracy studies involving PCPs and AI tool performance	AI improves diagnostic accuracy in primary care settings; helps reduce unnecessary referrals; potential for early diagnosis when a clinician is presented with multiple patients, AI-driven tools can help quickly identify high-risk lesions that require urgent referral to dermatology, thereby optimizing the workflow in primary care settings and alleviating the burden on dermatologists. Now, more advanced algorithms are designed to generate a list of differential diagnosis—a range of conditions that could explain the observed symptoms or appearance of a skin lesion, helps clinicians rapidly assess malignacy potential and referral prioritization.	Sensitivity: 0.58–0.96; Accuracy: 0.41–0.93; AUC: up to 0.97; Concordance improvement: up to +32% with AI support	High heterogeneity; underrepresentation of Fitzpatrick skin types V–VI; limited real-world clinical validation; algorithm generalizability is low	Level I – Moderate to High quality

Ref #	Article Name	Author & Date	Evidence Type	Study Design	Appraisal Tool Used	Sample/Sample size/ Setting	Study Findings that help answer EBP Question	Observerable Measures	Limitations	Evidence Level and Quality
14	Assessing Diagnostic Performance for Common Skin Diseases Using an AI-Assisted Tele-Expertise Platform	Le Lay et al. (2024)	Primary, Empirical	Diagnostic Accuracy Study	JBI Diagnostic Test Accuracy Checklist	70 patients, 195 images, 3 hospitals; AI vs. dermatologist gold standard	AI showed 90% Top 3 accuracy; promising for primary care use. The use of teledermatology via platforms like DermaDetect® enables patients to capture images of their skin issues and submit them without the need for an in-person visit. Dermatologists can then review these submissions asynchronously, diagnosing and prescribing treatment as necessary. This model not only allows for rapid handling of cases but also enhances accessibility to care, which is particularly beneficial for patients in remote areas.	Sensitivity: 88%, Specificity: 90%, Top 3 Accuracy: 90%	Limited dermatoses; Fitzpatrick II–III only; no biopsy confirmation for all	Level II – High quality
15	Clinical Utility of a Digital Dermoscopy Image-Based Artificial Intelligence Device	Witkowski et al. (2024)	Primary, Empirical	Diagnostic Accuracy Study	JBI Diagnostic Test Accuracy Checklist	50 skin lesions, 46 patients, 36 dermatologists in blinded image review with/without AI	AI improved diagnostic and management sensitivity and accuracy significantly. Studies have shown that when PCPs use the ESS (ESS (Elastic Scattering Spectroscopy) Device device, their ability to correctly identify melanomas (diagnostic sensitivity) increases significantly—from 67% to 88%. Additionally, their management sensitivity (likelihood of recommending correct action, such as referral or biopsy for concerning lesions) improved from 81% to 94%. Both improvements are statistically significant, as shown by the reported p-value.	Diagnostic Sensitivity: 86.1%, Management Sensitivity: 91.1%, AUC: ~85%	32% of lesions not biopsied; tested digitally, not in live clinic	Level II – High quality
16	Disparities in Dermatology AI Performance on a Diverse, Curated Clinical Image Set	Daneshjou et al. (2022)	Primary, Empirical	Diagnostic Accuracy Study	JBI Diagnostic Test Accuracy Checklist	656 biopsy-confirmed images, Fitzpatrick I–VI; AI vs. dermatologist ensemble	AI underperformed on darker skin tones; performance improved with diverse training data. "Globally, an estimated 3 billion people have inadequate access to medical care for skin disease" "Lack of Diversity in Datasets:" This articles ID a Gap in the research and image datasets of skin of color.	Pre-tuning AUC: 0.56–0.67; Post-tuning AUC: ~0.76–0.78 for FST I–II & V–VI	Bias in AI model; some label noise; retrospective image analysis	Level II – High quality
17	Effectiveness of an Image Analyzing AI-Based Digital Health Technology to Identify NMSC	Marsden et al. (2023)	Primary, Empirical	Diagnostic Accuracy Study (DERM003)	JBI Diagnostic Test Accuracy Checklist	572 patients, 611 lesions across 4 UK NHS centers; iPhone/Samsung dermoscopy devices	AI achieved high sensitivity and AUROC for SCC/BCC; potential for triage and early detection. "DERM could provide dermatologist level assessment of suspicious skin lesions earlier in the patient pathway, potentially enabling the earlier diagnosis of malignant lesions and improvement of differentiation between benign and malignant lesions."	AUROC: 0.85–0.89, Sensitivity: up to 98%, Specificity: up to 38%	Uneven skin tone representation (97% FST I–III); limited specificity	Level II – High quality

Ref #	Article Name	Author & Date	Evidence Type	Study Design	Appraisal Tool Used	Sample/Sample size/ Setting	Study Findings that help answer EBP Question	Observerable Measures	Limitations	Evidence Level and Quality
18	Access to Consultative Dermatologic Care via Physician-to-Physician Asynchronous Outpatient Telederm	Mizes et al. (2021)	Primary, Empirical	Retrospective Cohort	JBI Analytical Cross-Sectional Checklist	1581 consults, urban/rural PA	63% managed without in-person referral; 1 hr avg. response; high satisfaction. The paper compares teledermatology with usual referral processes by highlighting traditional wait times for in-person visits (about 20 days in Pennsylvania, 35 days nationally) versus the rapid responses in the teledermatology model (<1–16 hours).	Response time: 1 hr 13 mins; 63% managed online; Satisfaction: 81–90%	Single health system; not randomized	Level III – High quality
19	Store-and-Forward Teledermatology in Skin Cancer Triage	Moreno-Ramirez et al. (2007)	Primary, Empirical	Multicenter Prospective	JBI Diagnostic Test Accuracy Checklist	2,009 consults across 12 clinics (Spain)	Wait time reduced from 88.6 to 12.3 days; reduced unnecessary referrals.	Sensitivity: 0.99; Specificity: 0.62; Accuracy: 0.81	Single system; older data	Level II – High quality
20	The Use of Teledermatology for Skin Cancer Referrals: A Retrospective Study	Sekaran et al. (2024)	Primary, Empirical	Retrospective Single-Center Study	JBI Analytical Cross-Sectional Checklist	71 patients, 110 lesions; UK NHS system	Teledermatology saved 10 hours consultant time; 62 face-to-face visits avoided.	Concordance: 62%; BCC/Melanoma 100% Concordance	Limited skin tone diversity; single hospital	Level III – High quality
21	Teledermatology – A Systematic Review Based on Melanoma	Pala et al. (2020)	Secondary, Systematic	Systematic Review	JBI Systematic Review Checklist	33 studies on melanoma teledermatology; global scope	High diagnostic concordance with in-person exams; enables triage; patient satisfaction high.	Sensitivity: 87–100%; Specificity: 78–98% (varies by tool)	Variation in methodology and image quality; underreporting bias	Level I – High quality
22	A Call for Implementing Augmented Intelligence in Pediatric Dermatology	Issa et al. (2023)	Secondary, Narrative	Expert Commentary / Perspective	JBI Text & Opinion Checklist	No original data; expert overview of pediatric dermatology AI use; references existing models in limited pediatric contexts	Argues AI can address rural workforce shortages in pediatric dermatology; supports mobile app use and CNNs for diagnosis in underserved settings. "A study conducted in 2020 showed that 98% of all board-certified pediatric dermatologist practiced in metropolitan counties, 0% practiced in rural counties, and nine states had no pediatric dermatologist.7,8 As a consequence, the resulting gap in care is often filled by primary care providers, especially in rural areas, who have limited training to diagnose and manage the heterogeneous group of pediatric skin disorders. This also puts further stress on patients of ethnoracial minorities, as studies have shown that black children, Hispanic children, and Medicaid-insured children are already less likely to receive dermatologic care."	Accuracy cited from prior pediatric AI: 91.7% (infantile hemangiomas), 97.5% (5 diseases with mobile app)	Not a study; no new data; reliant on existing examples and hypothetical implementation	Level V – Moderate quality
23	GAPP Wait Time Report	GAPP Coalition (2021)	Grey Literature	Health Services Analysis	Not formally appraised	National survey and audit (U. S.)	Avg. derm wait 32.3 days; 40% waited >1 month; burden high. The report demonstrates that telemedicine can greatly decrease wait times in underserved areas, with studies showing that nearly 94% of patients were seen within two days via a teledermatology platform.	Avg. wait: 32.3 days; Anxiety: 54%	Advocacy-based; not peer-reviewed	Contextual Only (Not graded)

Ref #	Article Name	Author & Date	Evidence Type	Study Design	Appraisal Tool Used	Sample/Sample size/ Setting	Study Findings that help answer EBP Question	Observerable Measures	Limitations	Evidence Level and Quality
24	Teledermatology: Addressing Disparities in Health Care Access – A Review	Maddukuri et al. (2021)	Secondary, Non-Empirical	Narrative Review	JBI Text & Opinion Checklist	Literature review focused on underserved populations and teledermatology	Teledermatology can reduce geographic and racial disparities in access to dermatologic care. "A physician needs assessment in the USA calculated that is needed for every 30,000 people at least one dermatologist" "3 billion individuals residing in 345 rural communities do not have adequate dermatologic health care access" Studies suggest that the average wait time for an appointment ranges from 18 to 33 days depending on geographic region. "Teledermatology also allows referrals to occur quickly, often within hours or days, as opposed to being delayed for weeks or months after initial presentation", combined with AI this could really decrease wait times.	Summarizes trends and results from prior studies	Not systematic; some citations outdated; does not include direct AI application	Level V – Moderate quality
25	Modelling Policy Interventions to Improve Patient Access to Rural Dermatology Care	Cyr et al. (2021)	Primary, Modeling Study	Policy Simulation / Mixed Methods	JBI Analytical Cross-Sectional Checklist	Rural referral system data + stakeholder interviews	Optimized triage and telehealth reduced dermatology delays by up to 28 days. Training PCPs in Dermatology: The study recommends training PCPs to manage more dermatology conditions within primary care. This would enable PCPs to handle cases that do not require specialist intervention, reducing the need for vague referrals. Improving Diagnostic Accuracy: The study highlights that PCPs may have lower diagnostic accuracy for skin conditions compared to dermatologists. Therefore, improving PCP training in dermatology could lead to more accurate diagnoses and reduce the number of vague referrals. Study found 2 interventions most effective to reduce delays: Increasing PCP Dermatology: This involved training additional PCPs to manage specific dermatology cases in-house capacity, using Proxy Care: This strategy involved referring patients with discrete, non-cancerous lesions to non-dermatologist specialists.	Wait time modeled outcomes; pathway scenario comparisons	Modeling-based assumptions; limited real-world validation	Level IV – Moderate quality

Ref #	Article Name	Author & Date	Evidence Type	Study Design	Appraisal Tool Used	Sample/Sample size/ Setting	Study Findings that help answer EBP Question	Observerable Measures	Limitations	Evidence Level and Quality
26	Artificial Intelligence in Dermatology: A Primer	Young et al. (2020)	Secondary, Non-Empirical	Narrative Review	JBI Text & Opinion Checklist	No original sample; expert overview in Journal of Investigative Dermatology	Suggests AI may reduce wait times via triage and teledermatology; indirect conceptual support. "As AI becomes effective at assisting primary care providers with triage through teledermatology, referrals to dermatologists will be for more complex diagnoses and fewer benign diagnoses, such as benign skin lesions. This in turn may cause a contraction in the medical dermatology labor market demand, blunted somewhat by the procedural and cosmetic nature of many practices. We anticipate that dermatologists will see their role shift more toward management of acute and complex skin conditions, including initiating systemic treatment regimens or performing procedures, and involving visits that require face-to-face assessment and/or discussion with regards to patient preferences, values, and logistics"	None reported	Not systematic; no primary data; conceptual only	Level V – Moderate quality
27	Artificial Intelligence in the Non-Invasive Detection of Melanoma	Mendi et al. (2024)	Secondary, Non-Empirical	Narrative Review	JBI Text & Opinion Checklist / Custom	Multiple datasets reviewed; no original patient sample	Supports AI for melanoma detection and access expansion; lacks direct patient outcomes. "Although state-of-the-art diagnostic tools, including non-invasive imaging devices such as dermoscopes and confocal microscopes, have been developed to improve the accuracy of melanoma detection, visual assessment methods are still commonly used in patient skin self-exams and in primary care settings where non-invasive imaging devices are not available. Utilizing AI to enhance the accuracy of visual assessment methods for evaluating pigmented skin lesions with clinical images may contribute to an earlier diagnosis of melanoma."	Sensitivity/specificity from cited studies (80–95%)	Descriptive only; no primary data; no clinical context	Level V – Moderate quality
28	Nursing Workforce Fact Sheet	American Association of Colleges of Nursing (2024)	Grey Literature / Report	Workforce Data Summary	Not formally appraised	National U.S. nursing workforce statistics published by AACN	Provides contextual workforce data supporting the role of registered nurses in expanding dermatology access; reports that registered nurses (~4.7 million) constitute the largest segment of the U.S. healthcare workforce and are positioned to support task-shifting models in specialty care including dermatology.	RN workforce size; educational pipeline data; demographic trends	Advocacy/professional association source; not peer-reviewed; descriptive workforce data without comparative analysis.	Not graded (contextual)

Ref #	Article Name	Author & Date	Evidence Type	Study Design	Appraisal Tool Used	Sample/Sample size/ Setting	Study Findings that help answer EBP Question	Observerable Measures	Limitations	Evidence Level and Quality
29	Total Number of Nurse Practitioners (State Health Facts)	KFF (Kaiser Family Foundation, n.d.)	Grey Literature / Data Source	Population Data Summary	Not formally appraised	State-level U.S. data on the total number of licensed nurse practitioners	Provides contextual workforce data showing ~308,000 nurse practitioners in the U.S., all of whom maintain RN licensure; supports the rationale for leveraging NPs as a scalable workforce to address dermatology provider shortages and reduce wait times in underserved areas.	Total NP count by state; national total	Aggregated state-reported data; methodology and update frequency vary; not peer-reviewed.	Not graded (contextual)
30	Six Domains of Health Care Quality	Agency for Healthcare Research and Quality (2025)	Grey Literature / Government Framework	Conceptual Quality Framework	Not formally appraised	U.S. federal framework outlining six domains of healthcare quality (safe, effective, patient-centered, timely, efficient, equitable)	Provides the conceptual quality framework used to evaluate the contributions of AI-assisted dermatology and teledermatology; supports the review's emphasis on timeliness, equity, and efficiency as outcome domains relevant to wait time reduction and access expansion in provider shortage areas.	Six quality domains: safety, effectiveness, patient-centeredness, timeliness, efficiency, equity	Conceptual framework rather than empirical evidence; does not provide outcome data.	Not graded (contextual)
31	Primary Care Nurse's Role and Educational Preparedness in Skin Cancer Screening	Beames et al. (2024)	Secondary, Scoping Review	JBI Registered Scoping Review	JBI Scoping Review Checklist	54 studies (1992–2023); global; primary care nurse roles in dermatologic screening	Nurses underutilized but trainable; strong potential for expanding access in underserved areas. This paper discusses strategies like collaboration, use of technology, and upskilling nurses to address provider shortages, especially in rural settings.	Thematic mapping; no unified outcome metrics	Role-focused; lacks clinical effectiveness outcomes	Level V – Moderate quality
32	National Health Expenditures (NHE) Fact Sheet	Centers for Medicare & Medicaid Services (2025)	Grey Literature / Government Data	National Expenditure Data Summary	Not formally appraised	U.S. national health expenditure statistics published by CMS	Supplies macroeconomic context for the cost burden of U. S. healthcare and the imperative to reduce inefficiencies through AI-assisted triage, teledermatology, and task-shifting; healthcare currently represents the second-largest consumer of the national Gross Domestic Product (GDP), reinforcing the cost-reduction rationale for the interventions reviewed.	National health expenditure totals; percentage of GDP; year-over-year trend data	Government data summary; not peer-reviewed; does not assess specific dermatology interventions.	Not graded (contextual)

Appendix D. Summary of Key Findings from Included Studies

Outcome Domain	Key Findings	Representative Studies
Wait Time Reduction	AI-assisted tools (e.g., teledermatology, triage systems) reduced wait times by **7–30. days**, especially in underserved populations.	Dobry et al. [5]; Seiger et al.[6]; Cyr et al. [25] Foltz et al[4] (2024)
Reduction in In-Person Referrals	Teletriage tools avoided in-person visits in up to **72%** of cases, improving workflow efficiency and access.	Bianchi et al[10]
Diagnostic Accuracy	AI systems achieved **85–97% sensitivity** and **75–95% specificity**, often outperforming non-specialist providers.	Anderson et al [7]; Soenksen et al [9]; Tschandl et al[8]
Task-Shifting Potential	AI-assisted triage enabled safe delegation to nurses or PCPs, improving care in resource-limited settings.	Saga et al [12]; Cantisani et al [11]
Use in Underserved Settings	AI-supported tools were effectively deployed in **rural clinics, safety-net**	Cantisani et al [11]; Maddukuri et al [24]

	hospitals, and FQHCs, improving timely diagnosis and equity of access.	
Image Quality Impact	Diagnostic accuracy of AI was reduced when image quality was poor, highlighting the need for training and technical standards.	Mashoudy et al [2]; Brown et al.[3]
[3]Study Quality (JBI Rating)	14 high-quality, 2 moderate-quality, 10 moderate, 6 contextual/methodological (not graded). Diagnostic accuracy studies tended to rate higher than modeling or commentary papers.	Appraised with JBI tools

Note: The table summarizes themes derived from all included studies. Representative studies are listed.