Supplementary Material 2. Detailed search strategy

PubMed/Medline search strategy

Database: PubMed/Medline (National Library of Medicine)

Platform: PubMed interface

Date of Search: November 15, 2025

Date Range: January 1, 2000 to November 30, 2025

Language: English

Search String:

#1 "Artificial Intelligence"[Mesh] OR "Machine Learning"[Mesh] OR "Natural Language Processing"[Mesh]

#2 "artificial intelligence"[tiab] OR "AI"[tiab] OR "generative AI"[tiab] OR "generative artificial intelligence"[tiab]

#3 "large language model*"[tiab] OR "LLM"[tiab] OR "ChatGPT"[tiab] OR "GPT-4"[tiab] OR "GPT-3"[tiab] OR "GPT"[tiab]

#4 #1 OR #2 OR #3

#5 "Nurses"[Mesh] OR "Nursing"[Mesh] OR "Nurse Practitioners"[Mesh] OR "Nursing Staff"[Mesh]

#6 "nurs*"[tiab] OR "registered nurse*"[tiab] OR "nurse practitioner*"[tiab] OR "clinical nurse*"[tiab] OR "nursing staff"[tiab] OR "nursing practice"[tiab]

#7 #5 OR #6

#8 "Decision Making"[Mesh] OR "Clinical Decision-Making"[Mesh] OR "Decision Support Systems, Clinical"[Mesh] OR "Decision Support Techniques"[Mesh]

#9 "decision making"[tiab] OR "clinical decision*"[tiab] OR "decision support"[tiab] OR "clinical judgment"[tiab] OR "clinical judgement"[tiab]

#10 "diagnostic reasoning"[tiab] OR "clinical reasoning"[tiab] OR "patient care management"[tiab] OR "care planning"[tiab]

#11 #8 OR #9 OR #10

#12 #4 AND #7 AND #11

#13 #12 AND ("2000/01/01"[PDAT] : "2025/11/30"[PDAT])

#14 #13 AND (English[lang])

#15 #14 NOT (Editorial[PT] OR Comment[PT] OR Letter[PT] OR News[PT])

#16 #15 (Final search set)

Results: 412 records

Search Notes:

MeSH terms were exploded to include all narrower terms

Truncation (*) used to capture word variations

Title/abstract fields [tiab] searched for keywords

Publication date field [PDAT] used for date restrictions

Publication types excluded: editorials, comments, letters, news items*

Web of Science Search Strategy

Database: Web of Science Core Collection

Platform: Web of Science interface

Date of Search: November 16, 2025

Date Range: January 1, 2000 to November 30, 2025

Language: English

Search String:

TS=(("artificial intelligence" OR "generative AI" OR "generative artificial intelligence" OR "large language model*" OR "LLM" OR "ChatGPT" OR "GPT-4" OR "GPT-3" OR "machine learning" OR "natural language processing")

AND

(nurs* OR "registered nurse*" OR "nurse practitioner*" OR "clinical nurse*" OR "nursing staff" OR "nursing practice")

AND

("decision making" OR "clinical decision*" OR "decision support" OR "clinical judgment" OR "clinical judgement" OR "diagnostic reasoning" OR "clinical reasoning" OR "patient care" OR "care planning"))

Refinements Applied:

Document Types: Article

Timespan: 2000-2025

Language: English

Indexes: SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI

Results: 356 records

Search Notes:

TS = Topic search (searches title, abstract, author keywords, and Keywords Plus)

Truncation (*) used for word variations

Phrase searching used with quotation marks

Boolean operators (AND, OR) used to combine concepts*

CINAHL Search Strategy

Database: CINAHL Complete (Cumulative Index to Nursing and Allied Health Literature)

Platform: EBSCOhost

Date of Search: November 17, 2025

Date Range: January 1, 2000 to November 30, 2025

Language: English

Search String:

S1 (MH "Artificial Intelligence") OR (MH "Machine Learning") OR (MH "Natural Language Processing")

S2 TI ("artificial intelligence" OR "generative AI" OR "generative artificial intelligence" OR "large language model*" OR "LLM" OR "ChatGPT" OR "GPT-4" OR "GPT-3") OR AB ("artificial intelligence" OR "generative AI" OR "generative artificial intelligence" OR "large language model*" OR "LLM" OR "ChatGPT" OR "GPT-4" OR "GPT-3")

S3 S1 OR S2

S4 (MH "Nurses") OR (MH "Nursing") OR (MH "Nurse Practitioners") OR (MH "Nursing Staff") OR (MH "Nursing Practice")

S5 TI (nurs* OR "registered nurse*" OR "nurse practitioner*" OR "clinical nurse*" OR "nursing staff" OR "nursing practice") OR AB (nurs* OR "registered nurse*" OR "nurse practitioner*" OR "clinical nurse*" OR "nursing staff" OR "nursing practice")

S6 S4 OR S5

S7 (MH "Decision Making") OR (MH "Clinical Decision Making") OR (MH "Decision Support Systems, Clinical") OR (MH "Decision Support Techniques")

S8 TI ("decision making" OR "clinical decision*" OR "decision support" OR "clinical judgment" OR "clinical judgement" OR "diagnostic reasoning" OR "clinical reasoning") OR AB ("decision making"

OR "clinical decision*" OR "decision support" OR "clinical judgment" OR "clinical judgement" OR "diagnostic reasoning" OR "clinical reasoning")

S9 S7 OR S8

S10 S3 AND S6 AND S9

S11 S10

Limiters - Published Date: 20000101-20251130; Language: English; Publication Type: Academic Journal, Journal Article

Exclude - Publication Type: Editorial, Letter, Commentary

Results: 289 records

Search Notes:

MH = CINAHL Subject Heading (exploded)

TI = Title field

AB = Abstract field

Truncation (*) used for word variations

Limiters applied for date, language, and publication type*

Google Scholar Search Strategy

Database: Google Scholar

Platform: Google Scholar web interface

Date of Search: November 18-20, 2025

Date Range: 2000-2025

Language: English

Search String:

"generative artificial intelligence" OR "generative AI" OR "large language model" OR "ChatGPT" OR "GPT-4" OR "GPT-3"

AND

"nurses" OR "nursing" OR "nurse practitioners" OR "nursing practice"

AND

"decision making" OR "clinical decision" OR "decision support" OR "clinical judgment" OR "clinical reasoning"

Search Parameters:

Date range: 2000-2025 (custom range)

Sorted by: Relevance

Include patents: No

Include citations: Yes

Screening Process:

First 800 results reviewed

Results screened in batches of 100

Titles and abstracts reviewed for relevance

Full text accessed when available

Results: 790 records screened

Search Notes:

Google Scholar does not support complex Boolean operators in the same way as academic databases

Search conducted over multiple days to ensure comprehensive coverage

Phrase searching used with quotation marks

Results sorted by relevance to capture most pertinent studies

Duplicate checking performed against other database results

Additional Search Methods

Reference List Screening

Method: Manual review of reference lists from:

All included studies (n=23)

Relevant systematic reviews identified during screening (n=18)

Key review articles on AI in healthcare and nursing

Results: 12 additional potentially relevant articles identified and screened

Citation Tracking

Method: Forward citation tracking using Google Scholar

Key Papers Tracked:

Saban M, Dubovi I. (2024) - Comparative vignette study on AI in nursing decision-making

Topol EJ. (2019) - High-performance medicine and AI convergence

Tanner CA. (2006) - Clinical judgment in nursing

Thirunavukarasu AJ et al. (2023) - Large language models in medicine

Page MJ et al. (2021) - PRISMA 2020 statement

Results: 8 additional potentially relevant articles identified and screened

Grey Literature Search

Sources Searched:

American Nurses Association (ANA)

Website: nursingworld.org

Search terms: artificial intelligence, AI, decision support

Documents reviewed: Position statements, white papers, reports

Date: November 21, 2025

International Council of Nurses (ICN)

Website: icn.ch

Search terms: artificial intelligence, technology, digital health

Documents reviewed: Policy briefs, position statements

Date: November 21, 2025

Korean Nurses Association (KNA)

Website: koreanurse.or.kr

Search terms: 인공지능 (artificial intelligence), 간호 (nursing)

Documents reviewed: Reports, guidelines

Date: November 22, 2025

National Academy of Medicine (NAM)

Website: nam.edu

Search terms: artificial intelligence healthcare, nursing

Documents reviewed: Special publications, consensus reports

Date: November 22, 2025

Results: 3 relevant grey literature documents identified; none met inclusion criteria for empirical studies but informed background and discussion

Search Results Summary

Database/Source	Records Retrieved	After Deduplication
PubMed/MEDLINE	412	398
Web of Science	356	287
CINAHL	289	246
Google Scholar	790	393
Reference screening	12	8
Citation tracking	8	5
Grey literature	3	0
Total	1,870	1,324

Deduplication Process

Software Used: EndNote 20 and Covidence systematic review software

Process:

All search results imported into EndNote

Automatic duplicate detection run

Manual review of potential duplicates (n=87)

Final deduplicated set exported to Covidence for screening

Additional duplicates identified during screening (n=46)

Total Duplicates Removed: 523

Final Unique Records for Screening: 1,324

Search Strategy Development and Validation

Development Process:

Initial search strategy developed by lead reviewer in consultation with health sciences librarian

Pilot searches conducted in PubMed to test sensitivity and specificity

Search strategy refined based on known relevant articles

Peer review of search strategy by second reviewer

Search strategy adapted for each database with librarian guidance

Validation:

Known relevant articles (n=5 identified a priori) were all captured by the search strategy

Sensitivity: 100% (5/5 known articles retrieved)

Precision estimated at 5.2% based on final inclusion rate (68/1,324)

Search Strategy Limitations:

English language restriction may have excluded relevant non-English publications

Google Scholar results limited to first 800 due to platform restrictions

Some full-text articles may not have been indexed in databases at time of search

Grey literature search was not exhaustive due to resource constraints

Search Update Strategy

Given the rapid evolution of generative AI technology, the following update strategy is recommended:

Frequency: Search update every 6 months

Databases: Same four databases (PubMed, Web of Science, CINAHL, Google Scholar)

Date Range: From date of last search forward

Alert Systems:

PubMed automated email alerts set up for search strategy

Google Scholar alerts for key terms

Table of contents alerts for key journals

Key Journals for Monitoring:

Journal of Advanced Nursing

Nursing Research

International Journal of Nursing Studies

Journal of Nursing Scholarship

Computers, Informatics, Nursing

Journal of the American Medical Informatics Association

Nature Medicine

JAMA Network Open

Documentation and Reproducibility

Search Documentation:

All search strategies saved in EndNote library

Search results with dates and record counts documented

Database interfaces and versions noted

Search process documented in research protocol

Reproducibility:

Complete search strings provided for all databases

Date ranges and limiters clearly specified

Deduplication process described

All decisions documented for transparency

This detailed search strategy allows for replication and updating of the systematic review as new evidence emerges in this rapidly evolving field.