

## Database Search

### MEDLINE

1.	artificial intelligence/ or exp machine learning/ or natural language processing/ or neural networks, computer/ or cluster analysis/
2.	artificial* intelligen*.ti,ab,kf,kw.
3.	machine learning.ti,ab,kf,kw.
4.	(deep learning or convolutional neural network or artificial neural network).ti,ab,kf,kw.
5.	(cluster analysis or (unsupervised adj2 learning)).ti,ab,kf,kw.
6.	natural language processing.ti,ab,kf,kw.
7.	computer neural network*.ti,ab,kf,kw.
8.	or/1-7
9.	Chronic Pain/
10.	((Chronic* or Recurrent or Persistent*) adj3 pain*).ti,ab,kf,kw.
11.	or/9-10
12.	8 and 11
13.	limit 12 to english language
14.	13 not (animals/ not (humans/ and animals/))
15.	limit 14 to journal article
16.	limit 15 to ("review articles" or meta analysis or "systematic review" or comment or editorial)
17.	15 not 16
18.	exp Neoplasms/
19.	17 not 18
20.	remove duplicates from 19
21.	limit 20 to yr="2012 -Current"

### Web of Science Core Collection

(TS=((chronic OR persistent OR recurrent) NEAR/3 Pain) AND TS=("Machine Learning" OR "Artificial\* Intelligen\*" OR "Deep Learning" OR (Unsupervised NEAR/2 Learning) OR "Artificial Neural Network" OR "Convolutional Neural Network" OR "Natural Language Processing" OR "Cluster Analysis" OR "Clustering"))

### ACM Digital Library

((Chronic AND Pain) "chronic widespread pain" "persistent pain" "recurrent pain") AND ("Machine Learning" "Artificial Intelligence" "Deep Learning" "Unsupervised Learning" "Unsupervised Machine Learning" "Artificial Neural Network" "Convolutional Neural Network" "Natural Language Processing" "Cluster Analysis" "Cluster\*")

### IEEE Xplore

((chronic OR persistent OR recurrent) NEAR/3 Pain) AND ("Machine Learning" OR "Artificial\* Intelligen\*" OR "Deep Learning" OR (Unsupervised NEAR/2 Learning) OR "Artificial Neural Network" OR "Convolutional Neural Network" OR "Natural Language Processing" OR "Cluster Analysis" OR "Cluster\*" "All Metadata": "Full Text & Metadata":))

## Title and Abstract Screening

<b>LANGUAGE: Is this study in English?</b>	
<b>INCLUDE</b>	<b>EXCLUDE</b>
Studies written in English.	Studies written in any other language that is not in English only.

<b>TOPIC: Does the study focus on Chronic Pain?</b>	
<b>INCLUDE</b>	<b>EXCLUDE</b>
<ul style="list-style-type: none"> <li>Any Chronic Pain or recurrent pain or persistent pain such as:             <ul style="list-style-type: none"> <li>Chronic Primary Pain</li> <li>Fibromyalgia</li> <li>Myofascial Pain</li> <li>Muscle Pain or Myalgia</li> <li>Complex Regional Pain Syndrome</li> <li>Facial Pain</li> <li>Orofacial Pain</li> <li>Chronic headache</li> <li>Migraine</li> <li>Migraine Disorder</li> <li>Alice in Wonderland Syndrome</li> <li>Cluster Headache</li> <li>Paroxysmal Hemicrania</li> <li>SUNCT Syndrome</li> <li>Tension type headache</li> <li>Trigeminal autonomic cephalalgias</li> <li>Temporomandibular joint disorder</li> <li>Temporomandibular joint dysfunction</li> <li>Burning mouth syndrome</li> <li>Chest pain</li> <li>Epigastric pain</li> <li>Irritable bowel syndrome</li> <li>Abdominal pain</li> <li>Bladder pain</li> <li>Interstitial cystiti*</li> <li>Piriformis Muscle Syndrome</li> <li>Musculoskeletal pain</li> <li>Lumbago</li> <li>Low back pain</li> <li>Low backache</li> <li>Cervical pain</li> <li>Thoracic pain</li> <li>Neck pain</li> <li>Limb pain</li> <li>Phantom Limb Pain</li> <li>Postsurgical pain</li> </ul> </li> </ul>	<p>Any pain that is not Chronic.</p> <ul style="list-style-type: none"> <li>Cancer-related pain             <ul style="list-style-type: none"> <li>Chronic cancer pain</li> <li>Chronic post-cancer treatment pain</li> <li>Other cancer related pain</li> </ul> </li> <li>Acute Pain</li> <li>Chronic Pain is not the primary cause/motivation of the study.</li> </ul>

<ul style="list-style-type: none"> <li>○ Posttraumatic pain</li> <li>○ Neuropathic pain</li> </ul>	
<ul style="list-style-type: none"> <li>• “Chronic pain is pain that lasts for over <b>three months</b>. The pain can be there all the time, or it may come and go. It can happen anywhere in your body. Chronic pain can interfere with your daily activities, such as working, having a social life and taking care of yourself or others.”- Source: Cleveland Clinic</li> <li>• This list is not compiled maintaining any order. It is made from the search in database based on search experience and articles (ICD-11).</li> </ul>	<ul style="list-style-type: none"> <li>• “Chronic pain is pain that lasts for over three months. The pain can be there all the time, or it may come and go. It can happen anywhere in your body. Chronic pain can interfere with your daily activities, such as working, having a social life and taking care of yourself or others.” - Source: Spine-health</li> </ul>

<b>METHOD: Does the study use AI or Machine Learning methods?</b>	
<b>INCLUDE</b>	<b>EXCLUDE</b>
<p>Include articles that use any Artificial Intelligence or Machine Learning approach in their work:</p> <ul style="list-style-type: none"> <li>• Machine Learning</li> <li>• Artificial Intelligence</li> <li>• Deep Learning</li> <li>• Unsupervised Learning</li> <li>• Unsupervised Machine Learning</li> <li>• Artificial Neural Network</li> <li>• Deep Neural Network</li> <li>• Convolutional Neural Network</li> <li>• Natural Language Processing</li> <li>• Cluster Analysis</li> <li>• Clustering</li> </ul>	<p>Exclude Articles that does not explored any Machine Learning or AI methods.</p>

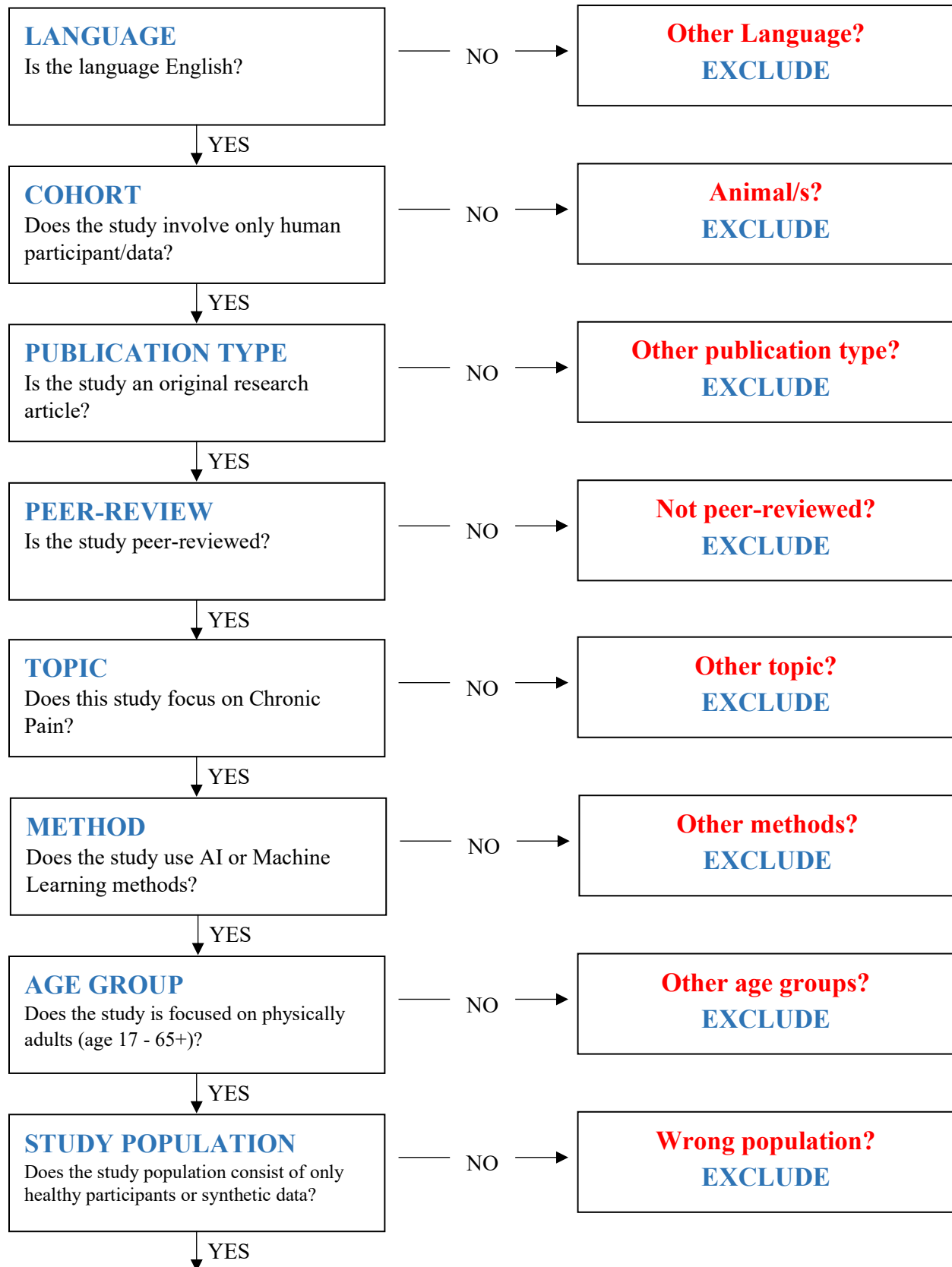
<b>PUBLICATION TYPE: Is this the right publication type?</b>	
<b>INCLUDE</b>	<b>EXCLUDE</b>
<p>All study types should be included, except for literature reviews. Here’s a comprehensive, list of what studies should be included at this point:</p> <ul style="list-style-type: none"> <li>• Research articles <ul style="list-style-type: none"> <li>○ Journal</li> <li>○ Conference paper</li> </ul> </li> <li>• Randomized control trial (RCT)</li> <li>• Cohort study</li> <li>• Cluster randomized control trial</li> <li>• Controlled before-after study (CBA)</li> <li>• Protocols</li> </ul>	<p>All evidence syntheses should be excluded:</p> <ul style="list-style-type: none"> <li>• Narrative reviews</li> <li>• Scoping reviews</li> <li>• Systematic reviews</li> <li>• Realist reviews</li> <li>• Mapping reviews</li> <li>• Literature reviews</li> <li>• Rapid reviews</li> <li>• Meta-Analysis</li> <li>• Overview or reviews</li> <li>• Umbrella reviews</li> </ul>

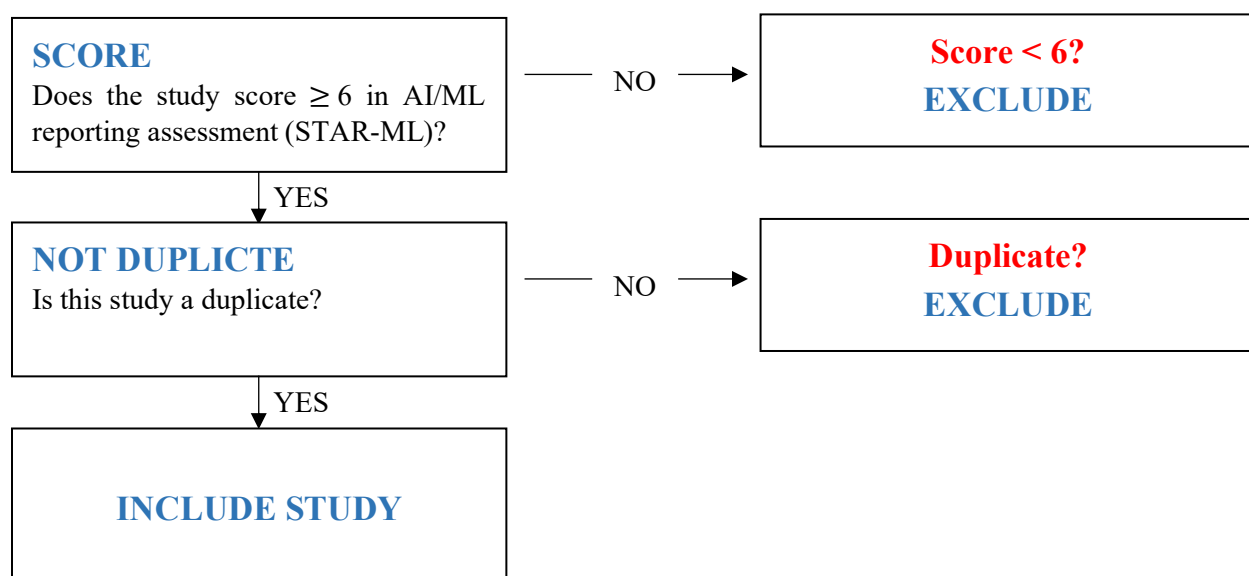
<ul style="list-style-type: none"> <li>Case control studies</li> </ul>	<p>In short, any type of literature review or synthesis should be excluded.</p> <ul style="list-style-type: none"> <li>Book chapters</li> <li>Editorials, letters to the editor, commentaries</li> <li>Opinion pieces</li> </ul> <p>Also, we are not including:</p> <ul style="list-style-type: none"> <li>Conference abstracts</li> <li>Organization reports</li> <li>Theses, dissertations</li> <li>Lessons learned</li> <li>Environmental scans</li> <li>Manuals, best practices, use cases</li> <li>Theoretical models</li> <li>Case studies</li> <li>Interviews/Observations</li> <li>Case reports</li> <li>Web pages</li> <li>Policy</li> <li>Guidelines</li> </ul>
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POPULATION: Is this study conducted on or using the data of human cohort?	
INCLUDE	EXCLUDE
Studies that involve human only.	Studies that involve animals.

## Full text Screening

### Flowchart:





### Detailed Information:

- The order of these reasons for exclusion matches the order in the flowchart for screening full text.
- Look and choose the reason for exclusion as soon as you spot it in the order below. At this stage, conflicts can arise not only for conflicting votes on including or excluding a study, e.g., if I choose language as the reason for exclusion for study X, and someone else chooses publication type for reason for exclusion, this will be marked as a conflict.
- An article can have more than one reason for exclusion, that's why we're going to go in this specific order to try to minimize conflicts.

Records will be kept of all articles we exclude, and report on that with details. For those articles that are incomplete, I will contact authors to try to get all the necessary information.

<b>LANGUAGE: Is this study is in English?</b>	
<b>INCLUDE</b>	<b>EXCLUDE</b>
Studies written in English.	Studies written in any other language that is not in English only.

<b>COHORT: Is the study about involves only human participant/data?</b>	
<b>INCLUDE</b>	<b>EXCLUDE</b>
<ul style="list-style-type: none"> <li>• Study participants should only be humans.</li> <li>• Data (primary/secondary use) should also come from human participants.</li> </ul>	<ul style="list-style-type: none"> <li>• Animals</li> </ul>

<b>PUBLICATION TYPE: Is this the right publication type (original research article)?</b>	
<b>INCLUDE</b>	<b>EXCLUDE</b>
<p>All study types should be included, except for literature reviews. Here's a comprehensive, list of what studies should be included at this point:</p> <ul style="list-style-type: none"> <li>• Research articles <ul style="list-style-type: none"> <li>◦ Journal</li> <li>◦ Conference paper</li> </ul> </li> <li>• Randomized control trial (RCT)</li> <li>• Cohort study</li> <li>• Cluster randomized control trial</li> <li>• Controlled before-after study (CBA)</li> <li>• Protocols</li> <li>• Case control studies</li> </ul>	<p>All evidence syntheses should be excluded:</p> <ul style="list-style-type: none"> <li>• Narrative reviews</li> <li>• Scoping reviews</li> <li>• Systematic reviews</li> <li>• Realist reviews</li> <li>• Mapping reviews</li> <li>• Literature reviews</li> <li>• Rapid reviews</li> <li>• Meta-Analysis</li> <li>• Overview or reviews</li> <li>• Umbrella reviews</li> </ul> <p>In short, any type of literature review or synthesis should be excluded.</p> <ul style="list-style-type: none"> <li>• Book chapters</li> <li>• Editorials, letters to the editor, commentaries</li> <li>• Opinion pieces</li> </ul> <p>Also, we are not including:</p> <ul style="list-style-type: none"> <li>• Conference abstracts</li> <li>• Organization reports</li> <li>• Theses, dissertations</li> <li>• Lessons learned</li> <li>• Environmental scans</li> <li>• Manuals, best practices, use cases</li> <li>• Theoretical models</li> <li>• Case studies</li> <li>• Interviews/Observations</li> <li>• Case reports</li> <li>• Web pages</li> <li>• Policy</li> <li>• Guidelines</li> </ul>

<b>PEER-REVIEW: Is the article peer-reviewed?</b>	
<b>INCLUDE</b>	<b>EXCLUDE</b>
<p>Only the research that is peer-reviewed.</p> <p><b>Note:</b> Check peer-review status from <a href="#">this website</a>.</p> <p><b>More:</b>  <a href="https://onesearch.library.utoronto.ca/faq/how-can-i-tell-if-article-peer-reviewed">https://onesearch.library.utoronto.ca/faq/how-can-i-tell-if-article-peer-reviewed</a>  <a href="https://guides.library.uq.edu.au/how-to-find/peer-reviewed-articles/check">https://guides.library.uq.edu.au/how-to-find/peer-reviewed-articles/check</a></p>	<p>Not peer-reviewed.</p>

**TOPIC: Does the study focus on Chronic Pain?**

INCLUDE	EXCLUDE
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<ul style="list-style-type: none"> <li>“Chronic pain is pain that lasts for over <b>three months</b>. The pain can be there all the time, or it may come and go. It can happen anywhere</li> </ul>	<ul style="list-style-type: none"> <li>“Chronic pain is pain that lasts for over three months. The pain can be there all the time, or it may come and go. It can happen anywhere</li> </ul>



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<b>AGE GROUP: Does the study is focused on physically adults?</b>	
<b>INCLUDE</b>	<b>EXCLUDE</b>
<p>Include only if the data are taken from participants with following age:</p> <ul style="list-style-type: none"> <li>• 17 - 65+</li> </ul>	<p>Studies that involve:</p> <ul style="list-style-type: none"> <li>• Infants</li> <li>• 0 - 16</li> </ul>

<b>STUDY POPULATION: Does the study population consist of only healthy participants or synthetic data?</b>	
<b>INCLUDE</b>	<b>EXCLUDE</b>
<p>The research/article should be conducted on a population or data which consist of a mix of healthy participants and Chronic pain patients.</p> <ul style="list-style-type: none"> <li>• Patients with single/multiple chronic pain disorder/s</li> <li>• Chronic pain patients but various chronic pain disorders</li> <li>• Chronic pain with other diseases</li> </ul>	<p>Studies that include:</p> <ul style="list-style-type: none"> <li>• Only healthy participants</li> <li>• Synthetic Data</li> <li>• Not the Doctors/Nurses of the Chronic Pain Patients</li> <li>• Chronic Diseases only (no Chronic Pain disorders)</li> </ul>

<ul style="list-style-type: none"> <li>• Chronic pain with other co-morbid diseases</li> <li>• Chronic pain diagnosis, prognosis, patient subgrouping, phenotyping, classification, treatment approaches, rehabilitation, digital patient interaction tool.</li> </ul>	
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<b>SCORE:</b> Does the study score 6 or more in the quality scale?	
<b>INCLUDE</b>	<b>EXCLUDE</b>
Studies that score 6-9 in STAR-ML.	Studies that score 0-5 in STAR-ML.

<b>NOT DUPLICATE:</b> Is this study a duplicate?	
<b>INCLUDE</b>	<b>EXCLUDE</b>
Non-duplicate studies	Duplicates.
Note: Sort by title and check for duplicates.	