

Appendix 1

Search Strategies

Database	#	Search Strategy
1) Medline (PubMed)		((student, nursing[MeSH Terms]) OR (((((((("nursing students"[Text Word]) OR ("pupil nurses"[Text Word]) OR ("undergraduate nurses"[Text Word]) OR ("baccalaureate nurses"[Text Word]) OR ("student nurses"[Text Word]) OR ("undergraduate student nurses"[Text Word]) OR (pre licensure nurses[Text Word]))) AND (("education"[MeSH Terms]) OR (((((((("education"[Text Word]) OR ("educational activities"[Text Word]) OR (training program*[Text Word]) OR ("learning"[Text Word]) OR ("teaching"[Text Word]) OR (teaching strateg*[Text Word]) OR ("teaching methods"[Text Word]))) AND (("patient safety"[MeSH Terms]) OR (((("patient safety"[Text Word]) OR ("patient safety competency"[Text Word]) OR ("error"[Text Word]) OR ("incident"[Text Word])))) Filters: English, Portuguese, Spanish, from 2011/7 - 2022/1
2) CINAHL and Education Research Complete (via EBSCOhost)	#1	((MM "Students, Nursing") OR (MH "Students, Nursing, Baccalaureate")) OR TX "nursing students" OR TX "pupil nurses" OR TX "undergraduate nurses" OR TX "baccalaureate nurses" OR TX "student nurses" OR TX "undergraduate student nurses"
	#2	((MM "Education") OR (MH "Education, Nursing, Graduate")) OR TX "education" OR TX "educational activities" OR TX training program* OR TX "learning" OR TX "teaching" OR TX teaching strateg*
	#3	((MM "Patient Safety") OR (MH "Health Care Errors")) OR TX "patient safety competency" OR TX error* OR TX "incident"
	#4	#1 AND #2 AND #3 Limiters - Published Date: 20110701-20220131 Narrow by Language: - Spanish, Portuguese, English
3) Scopus (Elsevier)		(TITLE-ABS-KEY({nursing students} OR {nursing pupils} OR {undergraduate nurses} OR {baccalaureate nurses} OR {student nurses} OR {undergraduate student nurses} OR {pre-licensure nurses}) AND TITLE-ABS-KEY({patient safety}) AND ALL({education} OR {learning} OR {teaching})) AND PUBYEAR > 2010 AND (LIMIT-TO (LANGUAGE,"English") OR LIMIT-TO (LANGUAGE,"Portuguese") OR LIMIT-TO (LANGUAGE,"Spanish"))
4) Cochrane (Central)	#1	MeSH descriptor: [Students, Nursing] explode all trees
	#2	(nursing students) OR (pupil nurses) OR (undergraduate nurses) OR (baccalaureate nurses) OR (student nurses) OR (undergraduate student nurses) OR (pre-licensure nurses)
	#3	#1 OR #2
	#4	MeSH descriptor: [Education] explode all trees
	#5	MeSH descriptor: [Education, Nursing] explode all trees
	#6	#4 OR #5
	#7	(education) OR (educational activities) OR (training program) OR (learning) OR (teaching) OR (teaching strategy) OR (teaching methods)
	#8	#6 OR #7
	#9	MeSH descriptor: [Patient Safety] explode all trees
	#10	(patient safety) OR (patient safety competency) OR (error) OR (incident)
	#11	#9 OR #10
	#12	#3 AND #8 AND #11 with Publication Year from 2011 to 2022
5) Lilacs		(mh:("Seguridad del Paciente")) AND (estudiante* OR student OR estudiante) AND (educacao OR ensino OR aprendizagem) AND (enfermagem OR nursing OR enfermeria) AND (db:("LILACS"))

6) Medes	(((“estudiantes de enfermería”[todos]) AND “enseñanza”[todos]) AND “seguridad del paciente”[todos]) https://medes.com/Public/Home.aspx
7) Clinical Trials.gov	condition or disease: patient safety other terms: nursing students intervention treatment: education https://www.clinicaltrials.gov/
8) Google Scholar	“patient safety” AND “education” and “nursing undergraduates” OR “student nurses” OR “nursing students” AND filetype: PDF OR RTF OR DOC OR TXT OR html
9) Dart-Europe	nursing students AND education AND patient safety https://www.dart-europe.org/basic-search.php
10) Proquest Dissertations	ft(“nursing students” OR “undergraduate nursing student” OR “pupil nurse” OR “student nurse”) AND ft(“education” OR “training” OR “teaching” OR teaching program* OR “teaching methods”) AND ft(“patient safety” OR “patient safety competency”) Additional limits - Date: From July 2011 to January 2022 Language: English, Portuguese, Spanish
11) CAPES thesis and dissertations	“estudantes de enfermagem” AND “educação” OR “ensino” OR “aprendizagem” AND “segurança do paciente” https://catalogodeteses.capes.gov.br/catalogo-teses/
12) The Virginia Henderson Global e-Repository	“nursing students” OR “undergraduate nursing student” OR “pupil nurse” OR “student nurse” AND “education” OR “training” OR “teaching” OR teaching program* OR “teaching methods” AND “patient safety” OR “patient safety competency” https://sigma.nursingrepository.org/discover#showfilters
13) Mednar	nursing students OR undergraduate nursing student OR pupil nurse OR student nurse AND education OR teaching OR teaching methods AND patient safety https://mednar.com/mednar/desktop/en/search.html?pane=advanced
14) Thesis Canada	nursing students OR student nurse AND education OR teaching AND patient safety https://www.bac-lac.gc.ca/eng/services/theses/Pages/search.aspx

Appendix 2

Critical Appraisal Tools

JBI CRITICAL APPRAISAL CHECKLIST FOR RANDOMIZED CONTROLLED TRIALS

Reviewer _____

Date _____

Author _____ Year _____ Record
Number _____

	Yes	No	Unclear	NA
1. Was true randomization used for assignment of participants to treatment groups?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Was allocation to treatment groups concealed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Were treatment groups similar at the baseline?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Were participants blind to treatment assignment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Were those delivering treatment blind to treatment assignment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Were outcomes assessors blind to treatment assignment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Were treatment groups treated identically other than the intervention of interest?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Were participants analyzed in the groups to which they were randomized?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Were outcomes measured in the same way for treatment groups?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Were outcomes measured in a reliable way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Was appropriate statistical analysis used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Was the trial design appropriate, and any deviations from the standard RCT design (individual randomization, parallel groups) accounted for in the conduct and analysis of the trial?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal: Include Exclude Seek further info

Comments (Including reason for exclusion)

JBI CRITICAL APPRAISAL CHECKLIST FOR QUASI-EXPERIMENTAL STUDIES

Reviewer _____

Date _____

Author _____ Year _____ Record

Number _____

	Yes	No	Unclear	Not applicable
1. Is it clear in the study what is the 'cause' and what is the 'effect' (i.e. there is no confusion about which variable comes first)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Were the participants included in any comparisons similar?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Was there a control group?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Were there multiple measurements of the outcome both pre and post the intervention/exposure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Were the outcomes of participants included in any comparisons measured in the same way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Were outcomes measured in a reliable way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Was appropriate statistical analysis used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal: Include Exclude Seek further info

Comments (Including reason for exclusion)

JBI CRITICAL APPRAISAL CHECKLIST FOR CASE SERIES

Reviewer _____

Date _____

Author _____ Year _____ Record
Number _____

	Yes	No	Unclear	Not applicable
• Were there clear criteria for inclusion in the case series?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Was the condition measured in a standard, reliable way for all participants included in the case series?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Were valid methods used for identification of the condition for all participants included in the case series?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Did the case series have consecutive inclusion of participants?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Did the case series have complete inclusion of participants?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Was there clear reporting of the demographics of the participants in the study?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Was there clear reporting of clinical information of the participants?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Were the outcomes or follow up results of cases clearly reported?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Was there clear reporting of the presenting site(s)/clinic(s) demographic information?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Was statistical analysis appropriate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal: Include Exclude Seek further info

Comments (Including reason for exclusion)

_____**JBI CRITICAL APPRAISAL CHECKLIST FOR COHORT STUDIES**

Reviewer _____

Date _____

Author _____ Year _____ Record

Number _____

	Yes	No	Unclear	Not applicable
1. Were the two groups similar and recruited from the same population?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Were the exposures measured similarly to assign people to both exposed and unexposed groups?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Was the exposure measured in a valid and reliable way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Were confounding factors identified?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Were strategies to deal with confounding factors stated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Were the groups/participants free of the outcome at the start of the study (or at the moment of exposure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Were the outcomes measured in a valid and reliable way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Was the follow up time reported and sufficient to be long enough for outcomes to occur?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Was follow up complete, and if not, were the reasons to loss to follow up described and explored?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Were strategies to address incomplete follow up utilized?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Was appropriate statistical analysis used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal: Include Exclude Seek further info

Comments (Including reason for exclusion)

JBI CRITICAL APPRAISAL CHECKLIST FOR CASE CONTROL STUDIES

Reviewer _____

Date _____

Author _____ Year _____ Record
Number _____

	Yes	No	Unclear	Not applicable
1. Were the groups comparable other than the presence of disease in cases or the absence of disease in controls?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Were cases and controls matched appropriately?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Were the same criteria used for identification of cases and controls?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Was exposure measured in a standard, valid and reliable way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Was exposure measured in the same way for cases and controls?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Were confounding factors identified?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Were strategies to deal with confounding factors stated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Were outcomes assessed in a standard, valid and reliable way for cases and controls?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Was the exposure period of interest long enough to be meaningful?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Was appropriate statistical analysis used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal: Include Exclude Seek further info

Comments (Including reason for exclusion)

JBI CRITICAL APPRAISAL CHECKLIST FOR ANALYTICAL CROSS SECTIONAL STUDIES

Reviewer _____

Date _____

Author _____ Year _____ Record
Number _____

	Yes	No	Unclear	Not applicable
1. Were the criteria for inclusion in the sample clearly defined?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Were the study subjects and the setting described in detail?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Was the exposure measured in a valid and reliable way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Were objective, standard criteria used for measurement of the condition?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Were confounding factors identified?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Were strategies to deal with confounding factors stated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Were the outcomes measured in a valid and reliable way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Was appropriate statistical analysis used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal: Include Exclude Seek further info

Comments (Including reason for exclusion)

Appendix 3 Extraction Tool

Extraction Tool
Study reference (Author/year) and Study ID
Country: Type of Higher Education Institution: Public () Private () Other ()
Setting of the intervention delivery: University () Clinical Setting () Both Combined ()
Description of the intervention: Type of educational method (s): Duration of the intervention:
Group description: Intervention: Control:
Sample Size: Intervention: Control:
Outcomes of interest assessed: Knowledge () Skills () Attitudes () Behaviours ()
Name and description of instrument for outcome assessment: Reliability: Validity:
Follow-up time:
Main Results:
Limitations: