

Supplementary File – Knowledge, Attitudes, and Practices Regarding Evidence-Based Practice Among Nurses and Nursing Students in Vietnam: A Systematic Review

Appendix A: PRISMA 2020 Checklist

Section and topic	Item #	Checklist item	Location where item is reported
Title			
Title	1	Identify the report as a systematic review.	Title
Abstract			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Abstract
Introduction			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Page 1
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Page 1
Methods			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Page 2
Information sources	6	Specify all databases, registers, websites, organizations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Page 2
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Page 2; Supplementary File, Appendix B
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Page 2

Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Pages 2–3
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g., for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Pages 2–3
	10b	List and define all other variables for which data were sought (e.g., participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Pages 2–3
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Pages 3–4
Effect measures	12	Specify for each outcome the effect measure(s) (e.g., risk ratio, mean difference) used in the synthesis or presentation of results.	Page 3
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Page 3
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Page 3
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Page 3
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Page 3
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g., subgroup analysis, meta-regression).	Not applicable
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	Pages 3–4
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	Not applicable
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	Not applicable
Results			

Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Page 4
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Page 4
Study characteristics	17	Cite each included study and present its characteristics.	Pages 4–6,
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Pages 7–8
Results of individual studies	19	For all outcomes, present, for each study: a) summary statistics for each group (where appropriate) and b) an effect estimate and its precision (e.g., confidence/credible interval), ideally using structured tables or plots.	Pages 5–6; Supplementary File, Appendix D
Results of syntheses	20a	For each synthesis, briefly summarize the characteristics and risk of bias among contributing studies.	Pages 4–8
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g., confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	Page 7; Supplementary File, Appendix D
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	Not applicable
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	Page 7; Supplementary File, Appendix E, Tables 1–3
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	Not applicable
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Not applicable
Discussion			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Page 12
	23b	Discuss any limitations of the evidence included in the review.	Page 13

	23c	Discuss any limitations of the review processes used.	Page 13
	23d	Discuss implications of the results for practice, policy, and future research.	Pages 13–14
Other information			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Page 1
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	Not reported
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	Not reported
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Page 2
Competing interests	26	Declare any competing interests of review authors.	Not reported
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	Not reported

Appendix B: Search Results

Database	Searching terms	Number of results	Screening procedure
PubMed: 20 results	“Evidence-Based Practice”[MeSH Terms] OR evidence-based practice[tiab] OR EBP[tiab] OR evidence based[tiab]	253,387	
	“Knowledge”[MeSH Terms] OR “Attitude”[MeSH Terms] OR skill*[tiab] OR practice*[tiab] OR readiness[tiab] OR belief*[tiab] OR experience*[tiab]	3,460,238	
	Nurses[MeSH Terms] OR Nursing Students[MeSH Terms] OR nurse[tiab] OR nurses[tiab] OR nursing student[tiab] OR nursing students[tiab]	410,977	
	“Vietnam”[MeSH Terms] OR Vietnam*[tiab]	30,376	
	(“Evidence-Based Practice”[MeSH Terms] OR evidence-based practice[tiab] OR EBP[tiab] OR evidence based[tiab]) AND (“Knowledge”[MeSH Terms] OR “Attitude”[MeSH Terms] OR skill*[tiab] OR practice*[tiab] OR readiness[tiab] OR belief*[tiab] OR experience*[tiab]) AND (Nurses[MeSH Terms] OR Nursing Students[MeSH Terms] OR nurse[tiab] OR nurses[tiab] OR nursing student[tiab] OR nursing students[tiab]) AND (“Vietnam”[MeSH Terms] OR Vietnam*[tiab])	20	Records screened according to predefined eligibility criteria.
Cochrane: 6 results	(“evidence-based practice” OR “EBP” OR “evidence-based”) AND (“knowledge” OR “attitude” OR “skill” OR “competence” OR “practice” OR “readiness”) AND (“nurse” OR “nursing student” OR “student”) AND (“Vietnam” OR Vietnam)	6	Records screened according to predefined eligibility criteria.
Google Scholar: 78 results	intitle:“evidence-based practice” AND (“nursing student” OR nurse) AND (knowledge OR skill* OR attitude) AND “Vietnam” AND “cross-sectional study”	30	Results sorted by relevance. Titles and abstracts screened for eligibility. Potentially relevant studies underwent full-text review.
	“thực hành dựa trên bằng chứng” AND “điều dưỡng”	48	Results sorted by relevance. Titles and abstracts screened for eligibility. Potentially relevant studies underwent full-text review.

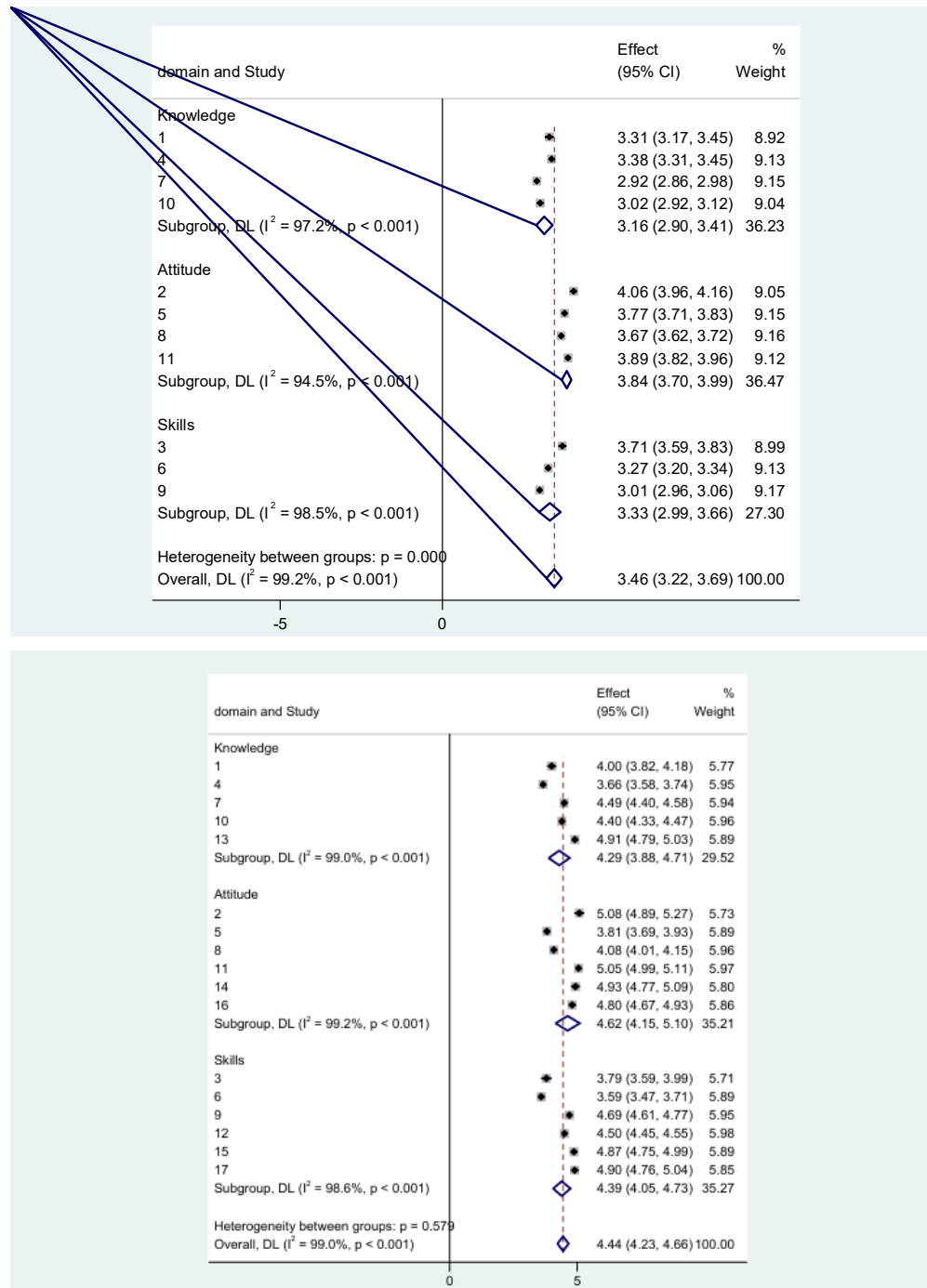
Vietnamese journals: 49 results	<i>Vietnam Journals Online</i>	7	Results sorted by relevance. Titles and abstracts screened for eligibility. Potentially relevant studies underwent full-text review.
	<i>Journal of Nursing Science</i> : “dựa vào bằng chứng”	10	Results sorted by relevance. Titles and abstracts screened for eligibility. Potentially relevant studies underwent full-text review.
	<i>Journal of Community Medicine</i> : “bằng chứng”	12	Results sorted by relevance. Titles and abstracts screened for eligibility. Potentially relevant studies underwent full-text review.
	<i>Journal of Disaster Medicine and Burn Injuries</i> : “dựa vào bằng chứng”	6	Results sorted by relevance. Titles and abstracts screened for eligibility. Potentially relevant studies underwent full-text review.
	<i>Can Tho Journal of Medicine and Pharmacy</i> : “dựa vào bằng chứng”	5	Results sorted by relevance. Titles and abstracts screened for eligibility. Potentially relevant studies underwent full-text review.
	<i>TNU Journal of Science and Technology</i> : “dựa vào bằng chứng”	9	Results sorted by relevance. Titles and abstracts screened for eligibility. Potentially relevant studies underwent full-text review.

Appendix C: JBI Critical Appraisal Criteria

Criteria	Requirement for assessment in the study
1. Were the criteria for inclusion in the sample clearly defined?	The study must clearly specify the inclusion criteria (participants to be included) and, if applicable, the exclusion criteria (participants to be excluded), with specific and measurable details (e.g., age, occupation).
2. Were the study subjects and the setting described in detail?	The study must describe the characteristics of the participants (e.g., age, gender, education level) and the setting (e.g., hospital, time frame, geographic location) to allow comparison with other populations.
3. Was the exposure measured in a valid and reliable way?	The exposure (factors potentially influencing knowledge, attitudes, and skills, such as demographics [gender, age, education level, years of experience] and training [prior EBP education, number of EBP training hours]) must be measured using clear, valid methods (measuring what they are intended to measure) and, if complex, reliable methods (yielding consistent results).
4. Were objective, standard criteria used for measurement of the condition?	The outcomes (dependent variables, such as EBP knowledge/attitudes) must be measured using standardized instruments (e.g., validated scales) with clearly defined assessment criteria (e.g., higher scores = better performance).
5. Were confounding factors identified?	Potential confounders (variables influencing the exposure–outcome relationship, such as age, education level) must be listed and measured, although analysis is not required for this criterion.
6. Were strategies to deal with confounding factors stated?	The study must report and justify the methods used to control for confounding factors (e.g., statistical analysis, matching, stratification) with specific details.
7. Were the outcomes measured in a valid and reliable way?	Outcome measurement instruments must be valid (measuring what they are intended to measure) and reliable (producing consistent results), with supporting evidence such as Cronbach's alpha (> 0.7) or other reliability tests.
8. Was appropriate statistical analysis used?	The statistical methods must be appropriate to the study design, objectives, and type of data, and sufficiently robust (including inferential tests such as <i>t</i> -test, ANOVA, rather than solely descriptive statistics).

Note. EBP = evidence-based practice; ANOVA = analysis of variance.

Appendix D: Forest Plot – Student and Nurse



Note. Weights and between-subgroup heterogeneity test are from random-effects model.

Appendix E: Supplementary Tables

Table 1

Leave-One-Out Sensitivity Analysis

Study removed	Pooled mean	95% CI
Duong (2022)	3.107	2.801–3.413
Oanh & Phuong (2024)	3.075	2.872–3.278
Lê & Kiều (2025)	3.237	3.004–3.471
Mai (2024)	3.202	2.867–3.536

Table 2

Sensitivity Analysis Comparing Random-Effects and Fixed-Effects Models

Population	Domain	Random-effects (95% CI)	Fixed-effects (95% CI)	Difference
Nursing students	Knowledge	3.156 (2.903–3.409)	3.122 (3.082–3.162)	0.034
	Attitudes	3.843 (3.697–3.988)	3.787 (3.754–3.820)	0.056
	Skills	3.326 (2.990–3.661)	3.150 (3.114–3.186)	0.176
Nurses	Knowledge	4.293 (3.879–4.707)	4.267 (4.226–4.307)	0.026
	Attitudes	4.623 (4.149–5.097)	4.563 (4.525–4.601)	0.060
	Practice	4.394 (4.053–4.734)	4.492 (4.457–4.527)	0.098

Table 3

Sensitivity Analysis Using Restricted Maximum Likelihood Estimation

Population	Domain	<i>k</i>	DerSimonian–Laird mean (95% CI)	REML mean (95% CI)
Nursing students	Knowledge	4	3.156 (2.903–3.409)	3.156 (2.935–3.376)
	Attitudes	4	3.843 (3.697–3.988)	3.844 (3.681–4.006)
	Skills	3	3.326 (2.990–3.661)	3.327 (2.928–3.726)
Nurses	Knowledge	5	4.293 (3.879–4.707)	4.293 (3.872–4.713)
	Attitudes	6	4.623 (4.149–5.097)	4.623 (4.188–5.058)
	Practice	6	4.394 (4.053–4.734)	4.392 (3.942–4.842)

Note. REML = restricted maximum likelihood.