

Leveling the Evidence without Falling Apart!

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Clinical Inquiry

Clinical practice is varied, complex, and often presents with thorny problems that clinicians struggle to solve

All types of clinical inquiry activities are necessary, and one is not more important than another

- o Is a constellation of research and research-related activities
- o Includes
 - o Quality Improvement
 - o EBP at the Point of Care
 - o Primary Research
 - o Secondary Research

Stannard, 2014

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Quality Improvement

- Defined as the deliberate application and/or implementation of knowledge in local settings that has been previously discovered

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Evidence-Based Practice at the Point of Care

- Defined as the utilization of all types of current evidence to guide decision making in health care
- Sources of evidence include data from research, expert consensus, and expert opinion

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Research

- o Can take many forms, depending on the discipline and research question
- o Divided into two major categories
 - o Primary Research
 - o Secondary Research



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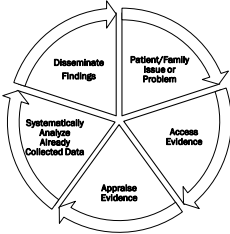
Primary Research

- Primary research is a systematic process that is discovery-oriented

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Secondary Research

- Involves the summary & analysis or synthesis of existing research
- Secondary analysis 
- Systematic review 
- Because no human subject contact is involved, IRB approval is not necessary



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What is a Systematic Review?

- The identification, selection, appraisal, and summary of primary (or single) studies addressing a focused clinical question using methods to reduce the likelihood of bias
- Formal SRs are incredibly rigorous!
- The SR is a form of research—frequently referred to as secondary research
 - Also referred to as a form of evidence synthesis
 - Stannard, 2022

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Online Databases of Systematic Reviews


- Cochrane Collaboration: quantitative health science reviews
 - Oxford, United Kingdom
- JBI (formerly known as the Joanna Briggs Institute): qualitative & quantitative nursing and health science reviews
 - Adelaide, Australia
- Campbell Collaboration: quantitative social science reviews
 - Oslo, Norway



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Common Theme: Five Steps of EBP

- 1 Identify the problem
- 2 Access the evidence
- 3 Critically appraise the evidence
- 4 Use the evidence to change practice
- 5 Evaluate the practice change



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What is EBP?


• “Evidence-based medicine is the integration of best research evidence with clinical expertise and patient values”

• Sackett et al., 2000

Traditional Definition of EBP

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Think of EBP as a 3-Legged Stool



Best Available Evidence Clinical Expertise Patient/Family Preferences

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What is EBP?

EBP for nursing is a way of entering the situation with curiosity and engagement that follows the nursing process by responding to the issue or problem using the best available evidence

• Stannard, 2019

Practical Definition of EBP

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Nursing Process

- Assessment
- Diagnosis
- Planning
- Implementation
- Evaluation

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Five Steps of EBP

Identify	Identify the Problem
Access	Access the Best Evidence
Appraise	Critically Appraise the Evidence
Apply	Apply the Change/Intervention to Practice
Evaluate	Evaluate the Change/Intervention in Practice • Sackett & Rosenberg, 1995

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Putting It All Together...

Assessment & Diagnosis = Identify the Problem

Planning = Access the Best Evidence

Planning = Critically Appraise the Evidence

Implementation = Apply the Evidence

Evaluation = Evaluate the Change

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What is EBP?

EBP for nursing is a way of entering the situation with curiosity and engagement that follows the nursing process by responding to the issue or problem using the best available evidence

• Stannard, 2019

Practical Definition of EBP

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What is the Best Available Literature?

- Systematic reviews are the highest level of evidence, as they are a form of secondary research that pool high quality single studies into one research study
- RCTs fall below a rigorous systematic review, as they are single studies
- Quasi-experimental studies fall below RCTs because they lack randomization, which can lead to increased bias
- Observational studies (such as cohort, case-controlled, and descriptive studies) and qualitative studies fall below quasi-experimental studies, as they are conducted under less controlled conditions which can lead to increased bias
- Expert opinion, laboratory research, and expert consensus, while still important, are at the bottom of the evidence pyramid

Stannard, 2019

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Critical Appraisal of Evidence

- o An examination of all aspects of evidence (research and non-research) includes:
 - o A systematic and careful review of the content, the references, and the authors themselves
 - o Evidence should be unbiased or, at the very least, balanced
- o Goals are to judge the:
 - o Strengths
 - o Limitations
 - o Trustworthiness
 - o Meaning
 - o and Applicability and relevance to the question/project/practice
- o This is what helps you to determine where on the evidence pyramid the evidence falls!



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Why Critically Appraise?

Ideally, you wouldn't have to, provided:

All evidence is high quality

All evidence pertains to your question/project/practice area

All evidence is relevant

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Special Considerations for Research Evidence

Having a Dialogue with the Researcher

- o When critically appraising a research study, you are engaging in a dialogue with the researcher through her/his words, tables, and references
- o Critical appraisal and critique of a research article is enhanced when one has:
 - o Content expertise
 - o Methodological expertise
 - o Research expertise
- o Truism #1: There is no such thing as a perfect study!
- o Truism #2: Not everything that is published is a high quality study
- o Truism #3: The journal dictates some of the content

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Study Elements

1. Title
2. Problem Statement/Purpose/Aims
3. Theory/Conceptual Framework
4. Review of the Literature
5. Hypotheses (if applicable)
6. Methodology
 - Research Design
 - Recruitment/Sample
 - Data Collection
 - Variables
 - Instruments
 - Research Procedures
7. Statistical Tests/Data Analysis
8. Findings
9. Discussion
10. Tables/Figures
11. References
12. Abstract

Critical Appraisal of Research

- o Step I: Identifying the study elements
- o Step II: Determining the strengths and weaknesses of the study based on the elements using the ASPAN Critical Appraisal Tools
 - o Quantitative
 - o Qualitative/Mixed Method
 - o Systematic Review
- o Step III: Leveling the evidence using information from the Critical Appraisal Tools and the JBI FAME Scale
- o Step IV: Evaluating the credibility and meaning of a study to your question/project/practice

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ASPAN Quantitative Evidence Appraisal Tool

Prepared by: _____

Full Citation: _____

Appraisal Question	Yes	No	Unclear	N/A	Comments
1. Is the problem statement or purpose fully described?					
2. Is the conceptual framework aligned with the nature of the question?					
3. Is the conceptual framework integrated fully throughout the methods, analysis, and discussion sections?					
4. Does the review of literature describe the significance of the research?					
5. Do the articles cited in the review of literature relate to the problem statement or purpose?					
6. Do articles with hypothesis testing in a hypothesis testing?					
7. Was IRB approval obtained?					
8. Is the design of the study adequately and accurately described?					
9. Are the sampling procedures adequately described?					
10. Are the sampling procedures reliable?					
11. Are the data collection methods adequately described?					
12. Are the instruments used validated tools?					
13. Are the research procedures clearly stated?					
14. Were the appropriate statistical tests used?					

- Marking "Yes" means the item or process was described
- Marking "No" means the item or process was not described
- Marking "Unclear" means that the description provided was not sufficiently clear and the comment box should be used

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ASPAN Qualitative & Mixed Method Evidence Appraisal Tool

Prepared by: _____

Full Citation: _____

Appraisal Question	Yes	No	Unclear	N/A	Comments
1. Is the research purpose or aim fully described?					
2. Is the conceptual framework/philosophical approach aligned with the nature of the question?					
3. Is the conceptual framework/philosophical approach integrated fully throughout the methods, analysis, and discussion sections?					
4. Does the review of literature describe the significance of the research?					
5. Do the articles cited in the review of literature relate to the problem statement or purpose?					
6. Are data presented clearly and accurately?					
7. Was IRB approval obtained?					
8. Is the design of the study adequately and accurately described?					
9. Are the sampling procedures adequately described?					
10. Are the sampling procedures reliable?					
11. Are the data collection methods adequately described?					
12. Are the instruments used validated tools?					
13. Are the research procedures clearly stated?					
14. Were the appropriate statistical tests used?					

- Marking "Yes" means the item or process was described
- Marking "No" means the item or process was not described
- Marking "Unclear" means that the description provided was not sufficiently clear and the comment box should be used

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ASPAN Systematic Review Evidence Appraisal Tool Prepared by:

Full Citation:

Appraisal Question	Yes	No	Unclear	NA	Comments
1. Is the review clearly stated?					
2. Is the conceptual framework/theoretical approach aligned with the nature of the question?					
3. Does the background section describe the significance of this research?					
4. Do the articles cited in the background relate to the review question?					
5. Was the search strategy appropriate?					
6. Were the inclusion criteria appropriate for the review question?					
7. Are the appraisal procedures clear?					
8. Was critical appraisal conducted by two or more reviewers independently?					
9. Were methods used to minimize error in data extraction?					
10. Were the methods used to combine studies appropriate?					
11. Were the systematic review findings supported by the reported data?					
12. Can some or all of the findings be applied to your practice setting?					
13. Does the discussion address how the findings of the current study align with previous research published in the review of literature?					

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ASPAN Critical Appraisal Tools

- Found on the ASPAN website under "Research" tab
- Must be logged in as an ASPAN member to access the ASPAN critical appraisal tools

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JBFI FAME Scale

- ASPAN uses the JBI FAME Scale to level the evidence used in the Standards & Guidelines
- FAME Scale levels correlate with ASPAN evidence hierarchy
- Meaningfulness = Qualitative research
- Effectiveness = Quantitative research

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Your Turn!

- Would this study be classified as an M or E?
- What level would this study fall under?
- Answer: E1

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Your Turn!

- Would this study be classified as an M or E?
- What level would this study fall under?
- Answer: M3



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Your Turn!

- Would this study be classified as an M or E?
- What level would this study fall under?
- Answer: E3

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Your Turn!

Study Type	Quality	Level
Systematic Review	High	1
Randomized Controlled Trial	High	2
Non-Randomized Controlled Trial	Medium	3
Cohort Study	Medium	4
Cross-Sectional Study	Low	5
Case Report	Low	6
Case Series	Low	7
Expert Opinion/Consensus	Low	8

Abstract



Purpose
Postoperative nausea (PONV) is one of the most common untoward side effects after surgery and increases patient discomfort, hospital costs, and risk for postoperative complications. The quality of postoperative nausea prophylaxis and treatment of PONV in ambulatory surgery patients remains unclear.

Design
Quality improvement project evaluating the utilization of a band of essential oils through an individualized care plan in ambulatory care.

- Would this study be classified as an M or E?
- What level would this study fall under?
- Answer: It's QI, not research, so E4

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Your Turn!

Study Type	Quality	Level
Systematic Review	High	1
Randomized Controlled Trial	High	2
Non-Randomized Controlled Trial	Medium	3
Cohort Study	Medium	4
Cross-Sectional Study	Low	5
Case Report	Low	6
Case Series	Low	7
Expert Opinion/Consensus	Low	8

Abstract



Purpose
Enteral nutrition for intubated adults in the intensive care unit prior to general anesthesia: a scoping review

Author Information
School of Nursing, University of Mississippi Medical Center, Jackson, MS, USA

- Would this study be classified as an M or E?
- What level would this study fall under?
- Answer: E1

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Your Turn!

Study Type	Quality	Level
Systematic Review	High	1
Randomized Controlled Trial	High	2
Non-Randomized Controlled Trial	Medium	3
Cohort Study	Medium	4
Cross-Sectional Study	Low	5
Case Report	Low	6
Case Series	Low	7
Expert Opinion/Consensus	Low	8

Abstract



Purpose
Experiences of living with juvenile idiopathic arthritis: a qualitative systematic review

Author Information
School of Nursing, University of Mississippi Medical Center, Jackson, MS, USA

- Would this study be classified as an M or E?
- What level would this study fall under?
- Answer: Either M1 or M2; would need to read SR to determine level of quality

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Your Turn!

Study Type	Quality	Level
Systematic Review	High	1
Randomized Controlled Trial	High	2
Non-Randomized Controlled Trial	Medium	3
Cohort Study	Medium	4
Cross-Sectional Study	Low	5
Case Report	Low	6
Case Series	Low	7
Expert Opinion/Consensus	Low	8

Abstract



Purpose
Effect of phenylephrine on cerebral oxygen saturation and cardiac output in adults when used to treat intraoperative hypotension: a systematic review

Author Information
School of Nursing, University of Mississippi Medical Center, Jackson, MS, USA

- Would this study be classified as an M or E?
- What level would this study fall under?
- Answer: E1

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Your Turn!

Study Type	Quality	Level
Systematic Review	High	1
Randomized Controlled Trial	High	2
Non-Randomized Controlled Trial	Medium	3
Cohort Study	Medium	4
Cross-Sectional Study	Low	5
Case Report	Low	6
Case Series	Low	7
Expert Opinion/Consensus	Low	8

Abstract



Purpose
Effectiveness of non-pharmacological interventions to manage anxiety in adolescents in the perioperative period: a systematic review protocol

Author Information
School of Nursing, University of Mississippi Medical Center, Jackson, MS, USA

- Would this study be classified as an M or E?
- What level would this study fall under?
- Answer: E4, as it is just the research plan; the SR hasn't yet been conducted

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Your Turn!

Study Type	Quality	Level
Systematic Review	High	1
Randomized Controlled Trial	High	2
Non-Randomized Controlled Trial	Medium	3
Cohort Study	Medium	4
Cross-Sectional Study	Low	5
Case Report	Low	6
Case Series	Low	7
Expert Opinion/Consensus	Low	8

Abstract

Purpose
Propofol Anxiety Levels in Surgical Patients: A Comparison of Three Different Scale Scores

Author Information
School of Nursing, University of Mississippi Medical Center, Jackson, MS, USA

- Would this study be classified as an M or E?
- What level would this study fall under?
- Answer: E3

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Your Turn!

Abstract
Purpose
Design

Methodology	Appropriateness	Methodological Quality	Confidence in Evidence
Randomized Controlled Trial	Yes	High	High
Systematic Review	Yes	High	High
Cohort Study	Yes	High	High
Cross-sectional Study	Yes	High	High
Case-control Study	Yes	High	High
Case Report	Yes	High	High
Case Series	Yes	High	High
Expert Opinion	Yes	High	High
Other	Yes	High	High

- Would this study be classified as an M or E?
- What level would this study fall under?
- Answer: Either E1 or E2; would have to critique the study to determine width of CI

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Your Turn!

Abstract

Methodology	Appropriateness	Methodological Quality	Confidence in Evidence
Randomized Controlled Trial	Yes	High	High
Systematic Review	Yes	High	High
Cohort Study	Yes	High	High
Cross-sectional Study	Yes	High	High
Case-control Study	Yes	High	High
Case Report	Yes	High	High
Case Series	Yes	High	High
Expert Opinion	Yes	High	High
Other	Yes	High	High

- Would this study be classified as an M or E?
- What level would this study fall under?
- Answer: Not research; E4

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Your Turn!

Abstract
Purpose
Design

Methodology	Appropriateness	Methodological Quality	Confidence in Evidence
Randomized Controlled Trial	Yes	High	High
Systematic Review	Yes	High	High
Cohort Study	Yes	High	High
Cross-sectional Study	Yes	High	High
Case-control Study	Yes	High	High
Case Report	Yes	High	High
Case Series	Yes	High	High
Expert Opinion	Yes	High	High
Other	Yes	High	High

- Would this study be classified as an M or E?
- What level would this study fall under?
- Answer: E2

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Your Turn!

Abstract

Methodology	Appropriateness	Methodological Quality	Confidence in Evidence
Randomized Controlled Trial	Yes	High	High
Systematic Review	Yes	High	High
Cohort Study	Yes	High	High
Cross-sectional Study	Yes	High	High
Case-control Study	Yes	High	High
Case Report	Yes	High	High
Case Series	Yes	High	High
Expert Opinion	Yes	High	High
Other	Yes	High	High

- Would this study be classified as an M or E?
- What level would this study fall under?
- Answer: E1

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Your Turn!

Abstract

Methodology	Appropriateness	Methodological Quality	Confidence in Evidence
Randomized Controlled Trial	Yes	High	High
Systematic Review	Yes	High	High
Cohort Study	Yes	High	High
Cross-sectional Study	Yes	High	High
Case-control Study	Yes	High	High
Case Report	Yes	High	High
Case Series	Yes	High	High
Expert Opinion	Yes	High	High
Other	Yes	High	High

- Would this study be classified as an M or E?
- What level would this study fall under?
- Answer: E4; Review article, not research

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Important Caveats to Leveling

- o While one can determine, mostly, where on the JBI FAME Scale a study would fall without reading the full study, this is **STONGLY DISCOURAGED**, as ASPAN only wants to amplify and showcase high quality research!
- o In order to truly determine the quality of the study, the individual study elements must be identified and critiqued for their strengths and weaknesses
- o Like all things, practice makes perfect! You will get better at this skill as you do it more!

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Summary

- o It is an expectation that all nurses use EBP in their daily practice
- o ASPAN has adopted the new critical appraisal tools to ensure that the *Standards & Guidelines* utilize the best available evidence
- o These tools can also be used for:
 - o Component projects
 - o Unit projects
 - o Journal club
 - o ASPAN Committees and SWTs

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References

- o Sackett DL, Straus SE, Richardson WS, Rosenberg W, Haynes RB. *Evidence-based medicine: How to practice and teach EBM*, 2nd ed. Edinburgh: Churchill Livingstone; 2000:1.
- o Stannard D. A practical definition of evidence-based practice for nursing. *J Perianesth Nurs*. 2019;34:1080-1084.
- o Stannard D. A systematic approach to systematic reviews. *AORN J*. 2022;115(2):124-127.
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May The
Evidence Be
With You!

Questions?

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Test Questions

1. Clinical Inquiry includes

- a. Quality Improvement
- b. EBP at the Point of Care
- c. Primary Research
- d. Secondary Research
- e. All of the above

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Test Questions

2. What are the 3 legs of the EBP 3-legged stool?

- a. Best Available Evidence
- b. Clinical Expertise
- c. Patient/Family Preferences
- d. All of the above

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Test Questions

3. The ASPAN Critical Appraisal Tools can be used for

- a. Component Projects
- b. Unit Projects
- c. Journal Club
- d. ASPAN Committees and SWTs
- e. All of the above

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