

Appendix E Research Evidence Appraisal Tool

Evidence level and quality rating:	
Article title:	Number:
Author(s):	Publication date:
Journal:	
Setting:	Sample (composition and size):
<p>Does this evidence address my EBP question?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No-<i>Do not proceed with appraisal of this evidence</i></p>	
<p>Is this study:</p> <p><input type="checkbox"/> QuaNtitative (collection, analysis, and reporting of numerical data) Measurable data (how many; how much; or how often) used to formulate facts, uncover patterns in research, and generalize results from a larger sample population; provides observed effects of a program, problem, or condition, measured precisely, rather than through researcher interpretation of data. Common methods are surveys, face-to-face structured interviews, observations, and reviews of records or documents. Statistical tests are used in data analysis.</p> <p>➡ Go to <u>Section I: QuaNtitative</u></p> <p><input type="checkbox"/> QuaLitative (collection, analysis, and reporting of narrative data) Rich narrative documents are used for uncovering themes; describes a problem or condition from the point of view of those experiencing it. Common methods are focus groups, individual interviews (unstructured or semi structured), and participation/observations. Sample sizes are small and are determined when data saturation is achieved. Data saturation is reached when the researcher identifies that no new themes emerge and redundancy is occurring. Synthesis is used in data analysis. Often a starting point for studies when little research exists; may use results to design empirical studies. The researcher describes, analyzes, and interprets reports, descriptions, and observations from participants.</p> <p>➡ Go to <u>Section II: QuaLitative</u></p> <p><input type="checkbox"/> Mixed methods (results reported both numerically and narratively) Both quaNtitative and quaLitative methods are used in the study design. Using both approaches, in combination, provides a better understanding of research problems than using either approach alone. Sample sizes vary based on methods used. Data collection involves collecting and analyzing both quaNtitative and quaLitative data in a single study or series of studies. Interpretation is continual and can influence stages in the research process.</p> <p>➡ Go to <u>Section III: Mixed Methods</u></p>	

Appendix E

Research Evidence Appraisal Tool

<i>Section I: QuaNtitative</i>		
Level of Evidence (Study Design)		
A Is this a report of a single research study?	<input type="checkbox"/> Yes	<input type="checkbox"/> No Go to B
1. Was there manipulation of an independent variable?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2. Was there a control group?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
3. Were study participants randomly assigned to the intervention and control groups?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If Yes to questions 1, 2, and 3 , this is a <u>randomized controlled trial (RCT) or experimental study</u> .		LEVEL I
If Yes to questions 1 and 2 and No to question 3 <u>or Yes to question 1 and No to questions 2 and 3</u> , this is <u>quasi-experimental</u> . <i>(Some degree of investigator control, some manipulation of an independent variable, lacks random assignment to groups, and may have a control group).</i>		LEVEL II
If No to questions 1, 2, and 3 , this is <u>nonexperimental</u> . <i>(No manipulation of independent variable; can be descriptive, comparative, or correlational; often uses secondary data).</i>		LEVEL III
Study Findings That Help Answer the EBP Question		
<p>Skip to the <u>Appraisal of QuaNtitative Research Studies</u> section</p>		

Appendix E
Research Evidence Appraisal Tool

<i>Section I: QuaNtitative (continued)</i>		
B Is this a summary of multiple sources of research evidence?	<input type="checkbox"/> Yes <i>Continue</i>	<input type="checkbox"/> No Use Appendix F
1. Does it employ a comprehensive search strategy and rigorous appraisal method? <i>If this study includes research, nonresearch, and experiential evidence, it is an integrative review (see Appendix F).</i>	<input type="checkbox"/> Yes <i>Continue</i>	<input type="checkbox"/> No Use Appendix F
2. For systematic reviews and systematic reviews with meta-analysis (see descriptions below):		
a. Are all studies included RCTs?		LEVEL I
b. Are the studies a combination of RCTs and quasi-experimental, or quasi-experimental only?		LEVEL II
c. Are the studies a combination of RCTs, quasi-experimental, and nonexperimental, or non- experimental only?		LEVEL III
<p>A systematic review employs a search strategy and a rigorous appraisal method, but does not generate an effect size.</p> <p>A meta-analysis, or systematic review with meta-analysis, combines and analyzes results from studies to generate a new statistic: the effect size.</p>		
Study Findings That Help Answer the EBP Question		
<p>Skip to the Appraisal of Systematic Review (With or Without a Meta-Analysis) section</p>		

Appendix E
Research Evidence Appraisal Tool

Appraisal of QuaNtitative Research Studies			
Does the researcher identify what is known and not known about the problem and how the study will address any gaps in knowledge?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Was the purpose of the study clearly presented?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Was the literature review current (most sources within the past five years or a seminal study)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Was sample size sufficient based on study design and rationale?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
If there is a control group: <ul style="list-style-type: none"> • Were the characteristics and/or demographics similar in both the control and intervention groups? 	<input type="checkbox"/> Yes	<input type="checkbox"/> No	N/A
<ul style="list-style-type: none"> • If multiple settings were used, were the settings similar? 	<input type="checkbox"/> Yes	<input type="checkbox"/> No	N/A
<ul style="list-style-type: none"> • Were all groups equally treated except for the intervention group(s)? 	<input type="checkbox"/> Yes	<input type="checkbox"/> No	N/A
Are data collection methods described clearly?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Were the instruments reliable (Cronbach's α [alpha] ≥ 0.70)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	N/A
Was instrument validity discussed?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	N/A
If surveys or questionnaires were used, was the response rate $\geq 25\%$?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	N/A
Were the results presented clearly?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
If tables were presented, was the narrative consistent with the table content?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	N/A
Were study limitations identified and addressed?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Were conclusions based on results?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Complete the <u>Quality Rating for QuaNtitative Studies</u> section			

Appendix E

Research Evidence Appraisal Tool

Appraisal of Systematic Review (With or Without Meta-Analysis)		
Were the variables of interest clearly identified?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Was the search comprehensive and reproducible?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<ul style="list-style-type: none"> • Key search terms stated 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<ul style="list-style-type: none"> • Multiple databases searched and identified 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<ul style="list-style-type: none"> • Inclusion and exclusion criteria stated 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Was there a flow diagram that included the number of studies eliminated at each level of review?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Were details of included studies presented (design, sample, methods, results, outcomes, strengths, and limitations)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Were methods for appraising the strength of evidence (level and quality) described?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Were conclusions based on results?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<ul style="list-style-type: none"> • Results were interpreted 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<ul style="list-style-type: none"> • Conclusions flowed logically from the interpretation and systematic review question 	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Did the systematic review include a section addressing limitations and how they were addressed?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Complete the <u>Quality Rating for QuaNtitative Studies</u> section (below)		

Quality Rating for QuaNtitative Studies

Circle the appropriate quality rating below:

A High quality: Consistent, generalizable results; sufficient sample size for the study design; adequate control; definitive conclusions; consistent recommendations based on comprehensive literature review that includes thorough reference to scientific evidence.

B Good quality: Reasonably consistent results; sufficient sample size for the study design; some control, and fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence.

C Low quality or major flaws: Little evidence with inconsistent results; insufficient sample size for the study design; conclusions cannot be drawn.

Appendix E
Research Evidence Appraisal Tool

<i>Section II: Qualitative</i>		
Level of Evidence (Study Design)		
A Is this a report of a single research study?	<input type="checkbox"/> Yes this is Level III	<input type="checkbox"/> No go to II B
Study Findings That Help Answer the EBP Question		
Complete the Appraisal of Single Qualitative Research Study section (below)		

Appraisal of a Single Qualitative Research Study		
Was there a clearly identifiable and articulated:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
• Purpose?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
• Research question?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
• Justification for method(s) used?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
• Phenomenon that is the focus of the research?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Were study sample participants representative?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Did they have knowledge of or experience with the research area?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Were participant characteristics described?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Was sampling adequate, as evidenced by achieving saturation of data?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Data analysis:		
• Was a verification process used in every step by checking and confirming with participants the trustworthiness of analysis and interpretation?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
• Was there a description of how data were analyzed (i.e., method), by computer or manually?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do findings support the narrative data (quotes)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do findings flow from research question to data collected to analysis undertaken?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are conclusions clearly explained?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Skip to the Quality Rating for Qualitative Studies section		

Appendix E
Research Evidence Appraisal Tool

<p>B For summaries of multiple qualitative research studies (meta-synthesis), was a comprehensive search strategy and rigorous appraisal method used?</p>	<p><input type="checkbox"/> Yes Level III</p>	<p><input type="checkbox"/> No go to Appendix F</p>
<p>Study Findings That Help Answer the EBP Question</p>		
<p>Complete the <u>Appraisal of Meta-Synthesis Studies</u> section (below)</p>		

<p>Appraisal of Meta-Synthesis Studies</p>		
<p>Were the search strategy and criteria for selecting primary studies clearly defined?</p>	<p><input type="checkbox"/> Yes</p>	<p><input type="checkbox"/> No</p>
<p>Were findings appropriate and convincing?</p>	<p><input type="checkbox"/> Yes</p>	<p><input type="checkbox"/> No</p>
<p>Was a description of methods used to:</p> <ul style="list-style-type: none"> • Compare findings from each study? 	<p><input type="checkbox"/> Yes</p>	<p><input type="checkbox"/> No</p>
<ul style="list-style-type: none"> • Interpret data? 	<p><input type="checkbox"/> Yes</p>	<p><input type="checkbox"/> No</p>
<p>Did synthesis reflect:</p>	<p><input type="checkbox"/> Yes</p>	<p><input type="checkbox"/> No</p>
<ul style="list-style-type: none"> • New insights? 	<p><input type="checkbox"/> Yes</p>	<p><input type="checkbox"/> No</p>
<ul style="list-style-type: none"> • Discovery of essential features of phenomena? 	<p><input type="checkbox"/> Yes</p>	<p><input type="checkbox"/> No</p>
<ul style="list-style-type: none"> • A fuller understanding of the phenomena? 	<p><input type="checkbox"/> Yes</p>	<p><input type="checkbox"/> No</p>
<p>Was sufficient data presented to support the interpretations?</p>	<p><input type="checkbox"/> Yes</p>	<p><input type="checkbox"/> No</p>
<p>Complete the Quality Rating for Qualitative Studies section (below)</p>		

Appendix E

Research Evidence Appraisal Tool

Quality Rating for QuaLitative Studies

Circle the appropriate quality rating below:

No commonly agreed-on principles exist for judging the quality of quaLitative studies. It is a subjective process based on the extent to which study data contributes to synthesis and how much information is known about the researchers' efforts to meet the appraisal criteria.

For meta-synthesis, there is preliminary agreement that quality assessments should be made before synthesis to screen out poor-quality studies¹.

A/B High/Good quality is used for single studies and meta-syntheses².

The report discusses efforts to enhance or evaluate the quality of the data and the overall inquiry in sufficient detail; and it describes the specific techniques used to enhance the quality of the inquiry.

Evidence of some or all of the following is found in the report:

- **Transparency:** Describes how information was documented to justify decisions, how data were reviewed by others, and how themes and categories were formulated.
- **Diligence:** Reads and rereads data to check interpretations; seeks opportunity to find multiple sources to corroborate evidence.
- **Verification:** The process of checking, confirming, and ensuring methodologic coherence.
- **Self-reflection and self-scrutiny:** Being continuously aware of how a researcher's experiences, background, or prejudices might shape and bias analysis and interpretations.
- **Participant-driven inquiry:** Participants shape the scope and breadth of questions; analysis and interpretation give voice to those who participated.
- **Insightful interpretation:** Data and knowledge are linked in meaningful ways to relevant literature.

C Lower-quality studies contribute little to the overall review of findings and have few, if any, of the features listed for High/Good quality.

¹ https://www.york.ac.uk/crd/SysRev/ISSLI/WebHelp/6_4_ASSESSMENT_OF_QUALITATIVE_RESEARCH.htm

² Adapted from Polit & Beck (2017).

Appendix E
Research Evidence Appraisal Tool

<i>Section III: Mixed Methods</i>		
Level of Evidence (Study Design)		
You will need to appraise both the quaNtitative and quaLitative parts of the study independently, before appraising the study in its entirety.		
1. Evaluate the quaNtitative part of the study using Section I .	Level	Quality
Insert here the level of evidence and overall quality for this part:		
2. Evaluate the quaLitative part of the study using Section II .	Level	Quality
Insert here the level of evidence and overall quality for this part:		
3. To determine the level of evidence, circle the appropriate study design:		
<ul style="list-style-type: none"> • Explanatory sequential designs collect quaNtitative data first, followed by the quaLitative data; and their purpose is to explain quaNtitative results using quaLitative findings. The level is determined based on the level of the quaNtitative part. • Exploratory sequential designs collect quaLitative data first, followed by the quaNtitative data; and their purpose is to explain quaLitative findings using the quaNtitative results. The level is determined based on the level of the quaLitative part, and it is always Level III. • Convergent parallel designs collect the quaLitative and quaNtitative data concurrently for the purpose of providing a more complete understanding of a phenomenon by merging both datasets. These designs are Level III. • Multiphasic designs collect quaLitative and quaNtitative data over more than one phase, with each phase informing the next phase. These designs are Level III. 		
Study Findings That Help Answer the EBP Question		
Complete the Appraisal of Mixed Methods Studies section (below)		

Appendix E Research Evidence Appraisal Tool

Appraisal of Mixed Methods Studies ³			
Was the mixed-methods research design relevant to address the quaNtitative and quaLitative research questions (or objectives)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Was the research design relevant to address the quaNtitative and quaLitative aspects of the mixed-methods question (or objective)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
For convergent parallel designs, was the integration of quaNtitative and quaLitative data (or results) relevant to address the research question or objective?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
For convergent parallel designs, were the limitations associated with the integration (for example, the divergence of quaLitative and quaNtitative data or results) sufficiently addressed?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Complete the <u>Quality Rating for Mixed-Method Studies</u> section (below)			

³ National Collaborating Centre for Methods and Tools. (2015). Appraising Qualitative, Quantitative, and Mixed Methods Studies included in Mixed Studies Reviews: The MMAT. Hamilton, ON: McMaster University. (Updated 20 July, 2015) Retrieved from <http://www.nccmt.ca/resources/search/232>

Quality Rating for Mixed-Methods Studies
<p>Circle the appropriate quality rating below</p> <p>A High quality: Contains high-quality quaNtitative and quaLitative study components; highly relevant study design; relevant integration of data or results; and careful consideration of the limitations of the chosen approach.</p> <p>B Good quality: Contains good-quality quaNtitative and quaLitative study components; relevant study design; moderately relevant integration of data or results; and some discussion of limitations of integration.</p> <p>C Low quality or major flaws: Contains low quality quaNtitative and quaLitative study components; study design not relevant to research questions or objectives; poorly integrated data or results; and no consideration of limits of integration.</p>