Critical Appraisal of Healthcare Research: Experimental Studies

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# Evidence-Based Practice Roadmap

<table>
<thead>
<tr>
<th>Ask the Question</th>
<th>Find Best Evidence</th>
<th>Evaluate Evidence</th>
<th>Apply the Information</th>
<th>Evaluate Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Identify need</td>
<td>• Develop search strategy</td>
<td>• Review literature</td>
<td>• Develop practice recommendations</td>
<td>• Develop control plan</td>
</tr>
<tr>
<td>• Identify stakeholders</td>
<td>• Search databases</td>
<td>• Complete critical appraisal evidence table</td>
<td>• Establish metrics</td>
<td>• Track metrics</td>
</tr>
<tr>
<td>• Develop problem statement</td>
<td>• Apply filters and inclusion/exclusion criteria</td>
<td>• Develop final reference list</td>
<td>• Identify potential barriers to success</td>
<td></td>
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<tr>
<td>• Determine scope</td>
<td>• Import final articles into RefWorks</td>
<td>• Write narrative summary of evidence</td>
<td>• Create implementation plan</td>
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<tr>
<td>• Formulate PICO</td>
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<td>• Create communication plan</td>
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</tr>
</tbody>
</table>

- **Evaluate Outcomes**
  - • Develop control plan
  - • Track metrics
Evaluating Healthcare Research

Are the results valid?
METHODS Section

Are the results important?
RESULTS Section
EXPERIMENTAL STUDIES

Treatment Before

AND

Control After
Selection bias
Performance bias
Detection bias
Attrition bias
Reporting bias
Methods: Selection Bias

• Randomization
  • Similarity of groups
• Allocation concealment
  • Person randomizing subjects unaware of group assignment

This study was designed as a randomized controlled clinical trial. Participants were randomized, using a computer-generated 1:1 process, to the intervention or standard of care control arm and followed for 12 weeks.
Methods: Blinding

• **Performance Bias**
  • Subjects = decreases differences in behavior or response
  • Researchers and/or clinical staff = ensures similar treatment of both groups

• **Detection Bias**
  • Evaluators = ensures neutral assessment of outcomes
Results: Attrition Bias

• Loss to follow-up
  • < 5% = little bias
  • > 20% = serious threat
  • Intent-to-treat analysis

• Length of follow-up
  • Stopping a study early
Results: Reporting Bias

• Complete reporting of outcomes
  • All primary and secondary outcomes established in methods
  • All follow-up intervals
  • All significant and non-significant p-values
Discussion

• Limitations
• Confounders
• Conflict of interest
  • Authors
  • Funders
Evaluating Healthcare Research

Are the results valid?

Are the results important?