NUR100: Introduction to Professional Nursing (Alves)

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**Resource Overview**

For your assignment you will need to use at least to find several credible sources. Here’s what we’ll be covering today.

- Framing Your PICO Question
- What is a Systematic Review? What is a Meta-Analysis? Other types of studies?
- Finding Articles
- Other Useful Sources
PICO QUESTIONS

<table>
<thead>
<tr>
<th>Assess the patient</th>
<th>A clinical problem or question arises from the care of the patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask The Question</td>
<td>Construct a well-built clinical question derived from the case</td>
</tr>
</tbody>
</table>

OUR CASE EXAMPLE:

The patient is a 65 year old male with a long history of type 2 diabetes and obesity. Otherwise his medical history is unremarkable. He does not smoke. He had knee surgery 10 years ago but otherwise has had no other major medical problems. Over the years he has tried numerous diets and exercise programs to reduce his weight but has not been very successful. His granddaughter just started high school and he wants to see her graduate and go on to college. He understands that his diabetes puts him at a high risk for heart disease and is frustrated that he cannot lose the necessary weight. His neighbor told him about a colleague at work who had his stomach stapled and as a result not only lost over 100 lbs. but also "cured" his diabetes. He wants to know if this procedure really works.

The next step in this process is to take the identified concern or problem and construct a question that is relevant to the case and is phrased in such a way as to facilitate finding an answer. This is called the PICO question.

<table>
<thead>
<tr>
<th>P</th>
<th>I</th>
<th>C</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Patient Problem</td>
<td>Intervention Or Exposure</td>
<td>Comparison</td>
<td>Outcome</td>
</tr>
<tr>
<td>Who are the patients?</td>
<td>What do we do to them?</td>
<td>What do we compare the intervention with?</td>
<td>What happens?</td>
</tr>
<tr>
<td>What is the problem?</td>
<td>What are they exposed to?</td>
<td>What is the outcome?</td>
<td></td>
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[Diagram of PICO question components]
Anatomy of a good clinical question: PICO

PICO is a mnemonic that helps one remember the key components of a well-focused question. The question needs to identify the key problem of the patient, what treatment or tests you are considering for the patient, what alternative treatment or tests are being considered (if any) and what is the desired outcome to promote or avoid.

P= Patient Problem:

How would you describe a group of patients similar to yours? What are the most important characteristics of the patient? This may include the primary problem, disease, or co-existing conditions. Sometimes the gender, age or race of a patient might be relevant to the diagnosis or treatment of a disease.

I= Intervention, prognostic factor or exposure:

Which main intervention, prognostic factor, or exposure are you considering? What do you want to do for the patient? Prescribe a drug? Order a test? Order surgery? Or what factor may influence the prognosis of the patient - age, co-existing problems, or previous exposure?

C= Comparison:

What is the main alternative to compare with the intervention? Are you trying to decide between two drugs, a drug and no medication or placebo, or two diagnostic tests? Your clinical question may not always have a specific comparison.

O= Outcome:

What can you hope to accomplish, measure, improve or affect? What are you trying to do for the patient? Relieve or eliminate the symptoms? Reduce the number of adverse events? Improve function or test scores?
Our Case:

<table>
<thead>
<tr>
<th>Patient Problem</th>
<th>obese, diabetes type 2, male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>stomach stapling (gastric bypass surgery; bariatric surgery)</td>
</tr>
<tr>
<td>Comparison</td>
<td>standard medical care</td>
</tr>
<tr>
<td>Outcome</td>
<td>remission of diabetes; weight loss; mortality</td>
</tr>
</tbody>
</table>

Types of Studies

As you move up the pyramid the study designs are more rigorous and allow for less bias or systematic error that may distract you from the truth.
META-ANALYSIS

**Definition:** A Meta-analysis will thoroughly examine a number of valid studies on a topic and mathematically combine the results using accepted statistical methodology to report the results as if it were one large study.

Meta-analysis would be used for the following purposes:

- To establish statistical significance with studies that have conflicting results
- To develop a more correct estimate of effect magnitude
- To provide a more complex analysis of harms, safety data, and benefits
- To examine subgroups with individual numbers that are not statistically significant

If the individual studies utilized randomized controlled trials (RCT), combining several selected RCT results would be the highest-level of evidence on the evidence hierarchy, followed by systematic reviews, which analyze all available studies on a topic.

SYSTEMATIC REVIEW

**Definition:** Systematic Reviews focus on a clinical topic and answer a specific question. An extensive literature search is conducted to identify studies with sound methodology. The studies are reviewed, assessed for quality, and the results summarized according to the predetermined criteria of the review question.

RANDOMIZED CONTROLLED TRIAL

**Definition:** Randomized controlled clinical trials are carefully planned experiments that introduce a treatment or exposure to study its effect on real patients. They include methodologies that reduce the potential for bias (randomization and blinding) and that allow for comparison between intervention groups and control (no intervention) groups. A randomized controlled trial is a planned experiment and can provide sound evidence of cause and effect.

*Source: The Himmelfarb Health Sciences Library, used under CCBY License*
OTHER TYPES OF STUDIES

Case series and Case reports consist of collections of reports on the treatment of individual patients or a report on a single patient. Because they are reports of cases and use no control groups to compare outcomes, they have little statistical validity.

Case control studies are studies in which patients who already have a specific condition are compared with people who do not have the condition. The researcher looks back to identify factors or exposures that might be associated with the illness. They often rely on medical records and patient recall for data collection. These types of studies are often less reliable than randomized controlled trials and cohort studies because showing a statistical relationship does not mean that one factor necessarily caused the other.

Cohort studies identify a group of patients who are already taking a particular treatment or have an exposure, follow them forward over time, and then compare their outcomes with a similar group that has not been affected by the treatment or exposure being studied. Cohort studies are observational and not as reliable as randomized controlled studies, since the two groups may differ in ways other than in the variable under study.

Cross-sectional studies describe the relationship between diseases and other factors at one point in time in a defined population. Cross-sectional studies lack any information on timing of exposure and outcome relationships and include only prevalent cases. They are often used for comparing diagnostic tests. Studies that show the efficacy of a diagnostic test are also called prospective, blind comparison to a gold standard study. This is a controlled trial that looks at patients with varying degrees of an illness and administers both diagnostic tests — the test under investigation and the “gold standard” test — to all of the patients in the study group. The sensitivity and specificity of the new test are compared to that of the gold standard to determine potential usefulness.

Qualitative Research answers a wide variety of questions related to human responses to actual or potential health problems. The purpose of qualitative research is to describe, explore and explain the health-related phenomena being studied.

Retrospective cohort (or historical cohort) follows the same direction of inquiry as a cohort study. Subjects begin with the presence or absence of an exposure or risk factor and are followed until the outcome of interest is observed. However, this study design uses information that has been collected in the past and kept in files or databases. Patients are identified for exposure or non-exposures and the data is followed forward to an effect or outcome of interest.
KEYWORD SEARCHING

Choosing Keywords
Choosing your search words, or keywords, correctly can mean the difference between relevant and irrelevant results.

<table>
<thead>
<tr>
<th>“bariatric surgery”</th>
<th>“Type II Diabetes”</th>
</tr>
</thead>
<tbody>
<tr>
<td>“weight loss surgery” OR “stomach stapling”</td>
<td>“type 2 diabetes”</td>
</tr>
</tbody>
</table>

*Alternative keywords help to identify other words that may be used in articles to say the same thing. Choosing alternative keywords is almost as important as choosing your main search terms.

Phrase Searching
Phrase searching allows you to search for a phrase, as opposed to individual words. To complete a phrase search, use quotation marks around two or more word phrases. This will give you far more specific results.

**Example:** bariatric surgery = 4,464 results  
“bariatric surgery” = 4,411 results

Truncation
Truncation allows a researcher to search for multiple endings for a single word in a single search instead of trying spelling variations in multiple searchers. Most databases require the use of the asterisk (*) as the truncation symbol. If you’re not sure what a database requires, consult a librarian or the Help Menu of the database.

**Example:** cancer* finds items with the words cancer, cancers, cancerous, etc.

Boolean Logic
Using Boolean Logic in your advanced search means that you are using command words (Boolean operators) to connect your search terms. Boolean Logic allows you to conduct a more specific search and find relevant and specific information. The three Boolean operators are **AND**, **OR**, and **NOT**.

<table>
<thead>
<tr>
<th>AND</th>
<th>OR</th>
<th>NOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search Results will contain all terms used.</td>
<td>Search results will contain at least 1 term used.</td>
<td>Search results will not contain the eliminated word.</td>
</tr>
<tr>
<td>“bariatric surgery” <strong>AND</strong> “type 2 diabetes”</td>
<td>“bariatric surgery” <strong>OR</strong> “weight loss surgery”</td>
<td>“weight loss surgery” <strong>NOT</strong> diet</td>
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