Research for “nurse educators ”

A QUICK REVIEW FOR NURSING FACULTY

Why should nurse educators read research related to clinical practice?

1. To remain clinically current and competent.
2. To maintain a scholarly attitude toward patient care.
3. To model professional behavior to staff and students.
4. To remain familiar with research terminology and concepts.
5. To encourage clinical nurse researchers.
6. To foster ideas for individual study.

Remember the steps in the research process?

They vary according to basic methodology:

- Qualitative
- Quantitative

Qualitative Process (nonlinear)

1. Identify a research problem.
2. Do a literature review.
3. Select and gain entrée into research sites.
4. Utilize a design that emerges as data is collected. May be ethnographic, phenomenological, grounded theory, historical.
5. Address ethical issues.

Qualitative process (continued)

6. Collect the data.
7. Analyze the data.
8. Interpret the findings.
9. Communicate the findings.
10. Participate in the process of disseminating the findings.

Quantitative Process (linear)

1. Identify the research problem.
2. Review related literature.
3. Frame the problem conceptually.
4. Formulate hypotheses.
5. Select a design.
6. Identify population, sampling plan.
7. Select and test methods to measure variables.

Quantitative Process (continued)

8. Protect human rights.
9. Review and finalize the research plan.
10. Collect the data.
11. Analyze the data.
12. Interpret the findings.
13. Communicate the findings.
14. Participate in the process of disseminating the findings.

Start at the beginning

A good research project generally begins in the mind of an expert nurse.

When asked, most nurses can immediately come up with one or two researchable questions.

Most research questions are too broad at first. The narrower the focus, the easier the question is to research.

An example of a research question written by a BSN student

"What is the usefulness or accuracy of the current 1-10 pain scale assessment in treating a patient's pain, and what are other options that may prove more useful?"

Is this question researchable?

Characteristics of a Good Study Question

“FINER”

F= Feasible

I= Interesting

N= Novel

E= Ethical

R= Relevant

Asking “the Question”

The format:

Population

Intervention or Interest area

Comparison intervention or status

Outcome

Applying the “PICO” format

“What is the usefulness or accuracy of the current 1-10 pain scale assessment in treating a patient’s pain, and what are other options that may prove more useful?”

Does a 10 point pain Visual Analog Scale (____, ____) accurately assess pain in the first day postop abdominal total hysterectomy patient when compared with the Faces Pain Scale (Pasaro, 1997)?

Two basic reasons for conducting a literature review

📖To direct the planning and execution of a specific research study.

📖To define the state of the science in a given area of nursing practice.

Using reference management software

Makes it easy to track references obtained through electronic searches.

Conducts and then stores references for you, including an abstract.

Citation information readily available electronically when the review is written.

ProCite: http://www.isresearchsoft.com/pc/PChrome.asp

EndNote: http://www.endnote.com

Searching electronic nursing journals

Targeted to practice-specific nursing audiences.

Very current information (3-4 month review and publish time).

A list of current electronic nursing journals available at:

http://www.nursefriendly.com

http://www.medbioworld.com

Research Frameworks
Yes, you still need one

- Used to organize knowledge and establish what is known about a particular phenomenon.

- Should form a basis for the study and direct all aspects of it.

- Useful as a basis for generating predictions.

Vocabulary of research frameworks

Conceptual Model- Broadly explains phenomena of interest, expresses assumptions, and reflects a philosophical stance.

Middle range theory- Less abstract and more narrow in scope than conceptual models, thus have a greater appeal to clinicians.

Vocabulary of research frameworks (continued)

Practice or Intervention theory- Even more specific than middle range theories. Theoretically propose specific approaches to particular nursing practice situations. Sometimes called prescriptive theory.

An example of a practice theory: Colling, K. & Buettner, L. (2002). Simple pleasures interventions from the need-driven dementia-compromised behavior model. *Journal of Gerantological Nursing,* 28(10), 16-20.

Vocabulary of research frameworks (continued)

Implicit framework- nebulous or vaguely expressed ideas that form a theoretical basis for a quantitative study.

An example of an implicit framework:

Schmelzer, M. Case, P. Chappell, S. & Wright, K. (2000). Colonic cleansing, fluid absorption, and discomfort following tap water and soapsuds enemas. *Applied Nursing Research,* 13(2), 83-91.

Sampling Designs

- Non-probability Sampling
  - Convenience/Snowball
  - Quota
  - Purposive
- Probability Sampling
  - Simple Random
  - Stratified Random
  - Cluster
  - Systematic

Other things to remember about sampling:

Sample size is important (power analysis).

Random sampling is not the same as random assignment to groups.

Sampling in qualitative studies is usually nonrandom and sample size is small.

A large sample cannot make up for a faulty sampling design.

Sampling errors can cause faulty failure to reject null hypothesis (Type II error).

Research Design: the basics

- Qualitative
- Descriptive
- Correlational
- Quasi-experimental
- True experiments (RCTs, the new “gold standard” for EBP)
- Meta-analyses and systematic reviews

Threats to Internal Validity

Internal Validity: Refers to the extent to which it is possible to make an inference that the independent variable is truly causing or influencing the dependent variable.

Threats to internal validity are:

1. History- occurrence of events concurrent with independent variable.
2. Selection- biases resulting from preexisting differences between groups.
3. Maturation- processes occurring as a result of time.
4. Mortality- differential attrition from groups.

External Validity

External validity is the generalizability of research findings to other settings or samples. This is an issue of great importance for those interested in an evidence-based practice!

Can you see why?

Instrumentation

Without proper instrumentation even the most well-designed studies are doomed to fail.

Measurement error is the difference between the true measure and what is actually measured.

Measurement error exists in both direct and indirect measures and can be random or systematic.

Reliability and Validity

If an instrument is not reliable it cannot possibly be valid. In evaluating an instrument, the researcher cannot consider validity apart from reliability. Unfortunately, many published studies fail to give reliability and validity data on instruments used to measure study variables.

(Burns & Grove, 2007)

Warning: Don’t get confused!

“**Internal validity**” refers to a characteristic of a study’s design.

“**External validity**” refers to the generalizability of study findings.

“**Content, construct, or criterion-related validity**” refer to a characteristic of an instrument.

Measuring validity

Is my measurement valid? (Am I measuring what I think I am measuring?)

- Face validity
- Content validity
- Criterion-related validity
  - Predictive
  - Concurrent
- Construct validity
  - Known groups
  - Factor Analysis

Measuring reliability

Is my measurement reliable? (Am I getting the same measurement every time?)

- Stability
- Homogeneity (Internal consistency)
- Equivalence (Interrater)

Compute a reliability coefficient to determine, with a coefficient of 1.00 indicating perfect reliability and -1.00 indicating no reliability.

Basic statistics are usually grouped like this:

- **Descriptive** Measures of central tendency and correlation.
- **Non-parametric** Values cannot be inferred to a population.
- **Parametric** Values assumed to be representative of a population (normal distribution).

Essential statistics (also see handout)

p value Level at which the null hypothesis is rejected. This means that you can be sure with either 95 or 99% certainty that the null hypothesis is correctly rejected.

t-test Test for significant differences between two groups.

Essential statistics (continued)

Chi square Determines whether two variables are independent or related.

Pearson's r A measure of the strength of a correlation between two variables.

ANOVA A significant F statistic means that the variance between groups is greater than the variance within the group.

Resources for statistical help

Polit, D. (1996). *Data analysis & statistics for nursing research.* Stamford, Connecticut: Appleton & Lange.

Pyrczak, F. (2006). *Making sense of statistics* (4th ed.). Glendale, California: Pyrczak Publishing.

Resources for statistical help (continued)

Cronk, B. (2006). *How to use SPSS.* (4th ed.). Glendale, California: Pyrczak Publishing.

Other resources by Pyrczak Publishing.

Helping the ADN student learn to read research

Many students cannot differentiate between research and narratives.

Students often only read the abstract and the conclusion section.

Students tend to see one research report as “proof”.

Students are often afraid of tables, numbers, and symbols.

How do we prepare the ADN student for EBP (and further nursing education?)

Introduce and encourage library/internet searches for literature.

Introduce research terminology.

Help students identify published research.

Encourage a questioning attitude about patient care issues.

Promote learning as a professional lifestyle.

Model scholarly approach to patient care issues.

New directions for the RN to BSN in a beginning research course

1. Reduce the “fear factor.”
2. Teach article appraisal, not critique.
3. Produce consumers of research, not researchers.
4. Emphasize EBP (see assignment handout).

References

Burns, N. & Grove, S. *(2007). Understanding nursing research. Building an evidence-based practice.* St. Louis: Saunders/Elsevier.

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