Introduction to Research in Nursing

January 9, 2014 10:19 PM

Research: systematic inquiry that uses orderly, disciplined methods to answer questions or solve problems

Nursing research: systematic inquiry designed to develop knowledge about issues of importance to the nursing profession; systematic, rigorous, logical investigation that aims to answer questions about nursing phenomena

Why Conduct Research?

- To know
- To understand

Research is the systematic search for knowledge to ultimately improve the quality of
client care and health services

Carper's Patterns of Knowing

- Empirics—the science of nursing
- Aesthetics—the art of nursing
- Personal knowing
- Ethics or moral

Nursing Research

- □ Expands the discipline's unique body of scientific knowledge
- □ Forms the foundation for evidence-based nursing practice

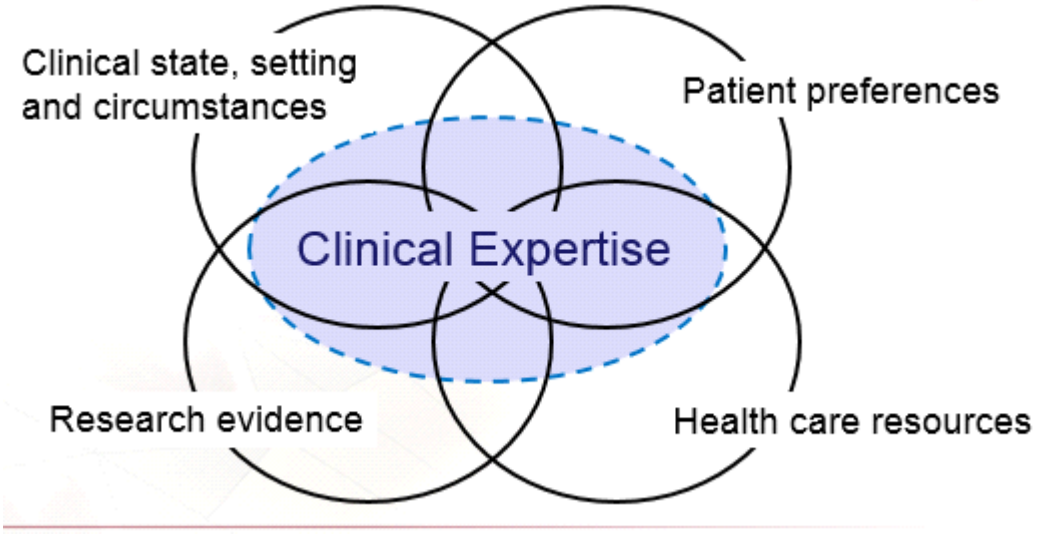
Professional practice includes continuing competence
"RNs obtain, maintain and continually enhance their knowledge and skills related to all aspects of their nursing practice and ensure that their practice is evidence-based. Formal and informal learning can contribute to the RN's progression from novice to expert, enabling RNs to respond to constantly changing technologies, systems and theories as well as specific client and career needs." - Canadian Nurses Association, 2007

Evidence-Based Practice (EBP)

- "The conscious, explicit, and judicious use of the current best evidence in the care of patients and the delivery of health care

services"
- "The integration of best research evidence with clinical expertise and patient values to facilitate clinical decision making."

A model for evidence-based clinical decisions



The debate:
A hierarchy of evidence

1. Systematic reviews or meta-analyses of RCTs
2. At least one RCT
3. At least one quasi-experimental study
4. Non-experimental studies
5. Systematic reviews of descriptive and qualitative studies
6. At least one descriptive or qualitative study
7. The opinion of experts

So remember…

- ◇ Evidence-based practice "…is the integration of best research evidence with clinical expertise and patient values to facilitate clinical decision making."
- ◇ Aesthetics—the art of nursing
- ◇ Personal knowing
- ◇ Ethics or moral

Evidence-informed practice
Use of best evidence: as in evidence-based practice

Also incorporates:

- Expert opinion

- Clinical expertise
- Patient preference
- Other resources

Research and the role of nurses

□ Consumer (knowledge user)
□ Research team member
□ Primary investigator or co-investigator

Consumer role

- All nurses should be intelligent consumers of research
- A consumer:
    - Actively uses and applies research
    - Understands the research process
    - Critiques research accurately
    - Applies research to practice
- Research team member role
- Participate in some aspect of health- related research studies
    - Example: collect data, engage in research protocol as part of a study

Primary or co-investigator role

- Masters or doctoral-prepared nurses may initiate and conduct research studies
- Doctoral prepared nurses lead interdisciplinary research teams, disseminate findings through publishing, theory building, presentations

Research Utilization

- Enables knowledge obtained from research to be transformed into clinical practice
- Practice becomes evidence-based

12 Determinants of Health:

1. Income and social status
2. Social support networks
3. Education and literacy
4. Employment and working conditions
5. Physical environments
6. Social environments
7. Biology & genetic endowment

8. Personal health practices & coping skills
9. Healthy child development
10. Health services (health promotion and illness prevention)
11. Culture
12. Gender

Knowledge translation (KT)
"... a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the health care system."

- KT is a process, a complex system of interactions between researchers and knowledge users

Knowledge to Action process

1. Knowledge creation

- Knowledge inquiry
  - Primary studies (published in the literature)
- Synthesis
  - Systematic reviews of the literature
- Products / tools
  - Best practice guidelines, patient decision aids, algorithms etc.

2. Action cycle (application of knowledge)

- Identify problem
- Identify, review, select knowledge
- Adapt knowledge to local context
- Assess barriers to knowledge use
- Select, tailor, implement interventions
- Monitor knowledge use
- Evaluate outcomes
- Sustain knowledge use

History of Nursing Research

✧ 19th century—groundwork was laid by Florence Nightingale, a pioneer in data collection and analysis, health promotion, prevention, asepsis
✧ 20th century—strong focus on education
  - First nursing research project funded in 1964 by a federal granting agency
  - First national conference in 1971 in Ottawa

- Doctoral programs in nursing (1991)
- Nursing research funding opportunities

Examples of funding agencies:
- Canadian Institutes of Health Research
- Canadian Foundation for Healthcare Improvement
- Canadian Nurses Foundation
- Registered Nurses Association of Ontario

Depth in Nursing Research
- Replication of nursing research studies provides depth
- Replication promotes generalizability of study findings to nursing practice
- Established research programs facilitate the replication of studies within a concentrated area

International Perspectives
- Global research community possible
- Cross-cultural and cross-national studies could be implemented
- Requires networks, databases, Web sites, funding, respect for cultural perspectives
- International Council of Nursing (ICN) dedicated to global nursing research

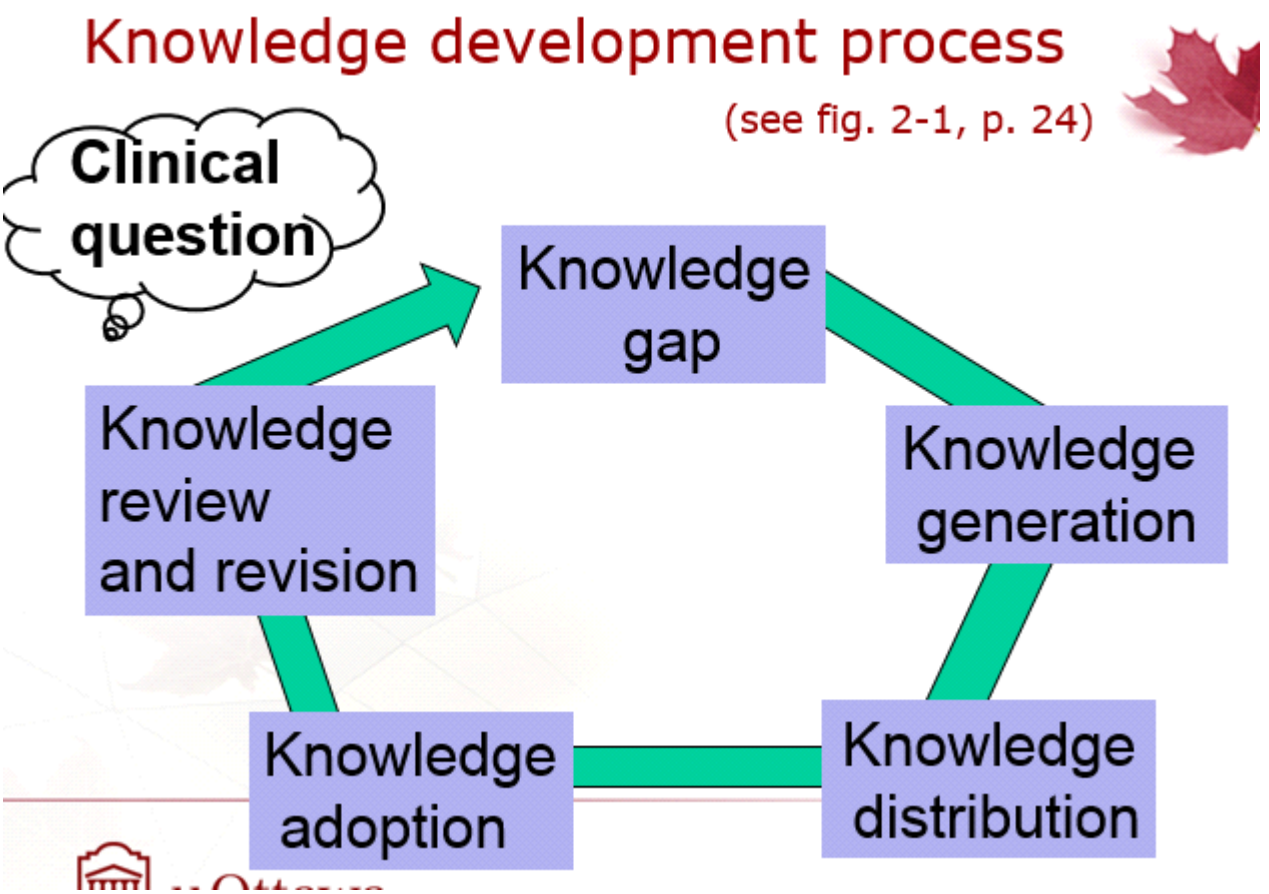
Major shifts in the delivery of health care:
- Community-based care
- Health care disparities
- Health promotion, risk reduction
- Complex client care
- Chronic illness
- High aging population
- Quality and accountability
- Technology in health care

<u>Canadian Nursing Research Priorities</u>
Priority 1: Nursing practice (context, populations, interventions)

Priority 2: Outcomes (valid measures)

Priority 3: Enhanced links between research and practice

The Research Process: Theoretical Framework



Nursing process: assessment, planning, implementation, evaluation

A Quantitative Study: "A Comparison of Adolescent & Adult Mothers' Satisfaction With Their Postpartum Nursing Care"
→ Two comparison groups
→ Analyzed using instruments

Clinical question
☞ Do pregnant teenagers sense the negative judgment of nurses?
☞ Do the negative attitudes held by some nurses towards pregnant teenagers influence their nursing care?

Knowledge gap
- Systematic search of the literature
- Databases
- Search terms
- Assistance of librarian

Concept

"... is an image or symbolic representation of an abstract idea."

☞ Example: Patient satisfaction

Theory

"...a set of interrelated concepts that serves the purpose of explaining or predicting phenomena."

→ How are the concepts related to each other?

☞ Interpersonal dimension of care

☞ Patient satisfaction - Patient experience

Framework

"The framework for research provides guidance for the researcher as study questions are fine-tuned, methods for measuring variable are selected and analyses are planned."

- Created to guide research = conceptual framework
  - Making concepts together yourself
- Identified to guide research = theoretical framework
  - Ex: literature

Quantitative research

1. Deductive reasoning
2. Hypothesis
3. Use of objective, precise, highly controlled measurement techniques to gather information (data)
   - Ex. Participants' responses to questions are restricted to a preselected set of responses
4. Data are analyzed and summarized statistically

Quantitative research: Deductive reasoning

- ◇ a logical thought process in which hypotheses are derived from theory
- ◇ reasoning moves from the general to the particular.

Quantitative research: Deductive reasoning (example)

- "top-down" triangle
  - More general study (broad area of knowledge/research) applied to a specific case (answering a specific question)
- Patient satisfaction is positively influenced by the quality of the health care provider-patient interpersonal relationship
  - *If pregnant teens perceive the judgmental (negative) attitudes of*

nurses
    - *Then there will be a negative influence the quality of their interpersonal relationship*
    - *And pregnant teens will have poor patient satisfaction*

Quantitative research: Hypothesis
Hypothesis – A best guess or prediction about what a researcher expects to find out with regard to the relationship between two or more variables.
Ex. teenage mothers will have lower patient satisfaction scores than adult mothers

Research question
Is there a difference between adolescent mothers' and adult mothers' satisfaction with inpatient postpartum nursing care?

Quantitative research: Objective, highly controlled
The variables

- Conceptual definition
  → Dictionary / theoretical definition
- Operational definition
  → How will the concept be measured?
  → 'Instrument' or 'tool'
  → Newcastle Satisfaction with Nursing Scale (NSNS)
- Example: Data collected by questionnaire

<u>Experience Scale Items</u>

Experience Scale items:
Tell me the number of the answer which best describes your experience:
Item 5. Nurses take a long time to come when they are called.
Item 10. No matter how busy nurses are, they make time for me.
Item 17. Nurses explain what they are going to do to me before they do it.

Disagree completely	Disagree a lot	Disagree a little	Neither agree nor disagree	Agree a little	Agree a lot	Agree completely
1	2	3	4	5	6	7

<u>Satisfaction Scale Items</u>

Satisfaction Scale items:

Thinking about your stay on the unit, how do you feel about:

Item 7. The amount of information nurses give to you.

Item 8. How often nurses check to see if you are okay.

Item 15. How nurses listen to your worries and concerns.

Not at all satisfied	Barely satisfied	Quite satisfied	Very satisfied	Completely satisfied
1	2	3	4	5

Knowledge generation

⇒ Teenage mothers are less satisfied with their inpatient postpartum nursing care than adult mothers.

⇒ What are the underlying reasons for the difference in satisfaction?

Philosophies of research

There are different worldviews or paradigms of thought about...

- Knowledge
- Truth

Three paradigms commonly referred to in nursing research are:

1. Post-positivism
2. Constructivism
3. Critical social thought

Post-positivism

The philosophical belief (paradigm / worldview) that informs quantitative research

◇ Objectivity is valued

◇ Emphasis on proving/disproving

◇ Encourages the intense scrutiny of research findings for the purpose of excluding knowledge that was not developed through a rigorous process.

Constructivism

A philosophical paradigm/worldview that informs qualitative research

❖ Subjectivity (personal knowing) is valued

❖ Truth, and our understanding of the world are determined by our life experiences

❖ Truth is never absolute

❖ Knowledge development occurs through observation and dialogue

Critical social thought
A philosophical paradigm/worldview that can inform quant. & qual. research

- Reality is constructed by people with the most power at a particular point in history (or culture)
- Values understanding health and illness within the context of history
- Health and other aspects of reality are shaped by numerous social, political, economical, and cultural factors (ex. gender, social status)
  → Determinants of Health
- Goal is to provide evidence that will support change

A Qualitative Study…

- Qualitative research: "Adolescents' Perceptions of Inpatient Postpartum Nursing Care"
- Research question (example)
  How do adolescent mothers perceive and describe their experiences of satisfactory and unsatisfactory inpatient postpartum nursing care?

Qualitative research

- Inductive reasoning
- Values the subjective experience
- Data are words or text
- Purpose is often to understand the meaning of a human experience

Qualitative research: Inductive reasoning
"...a process of starting with the details of experience and moving to a general picture."

"...generalizations are developed from specific observations; reasoning moves from the particular to the general."

Qualitative research: Values the subjective experience

- "...emphasis is on capturing the personal perceptions of the study participants."
- Usually a small number of study participants
- Explore participants' experiences in depth

Qualitative research: Data are words or text
→ Data collection methods are often interviews (1:1) or focus groups
→ Audio-recorded & transcribed

→ Text is analyzed for patterns using a systematic approach

Qualitative research: Data collection (example)

- ✧ Purposeful sampling
- ✧ 14 participants
- ✧ 1:1 interviews (recorded)
  - – 16 broad, open-ended questions
  - – Ex.: "Tell me about the nursing care during your stay on the postpartum unit"

Qualitative research: Data analysis

- ○ Interviews transcribed verbatim
- ○ Reading, re-reading
- ○ Systematic sorting of the data into codes, themes
- ○ How are themes related? Patterns?
- ○ Results use quotes

Knowledge generation

"Adolescent mothers are satisfied with postpartum nursing care when they actively participate in their own care. This participation is dependent on the establishment of a nurse-adolescent mother relationship in which the adolescent mother feels sufficiently 'at ease' with the nurse to identify her needs and concerns. The initial development of this relationship is dependent on the nurse's ability to put adolescent mothers at ease and encourage open communication."

The Research Process: Critical Reading Strategies

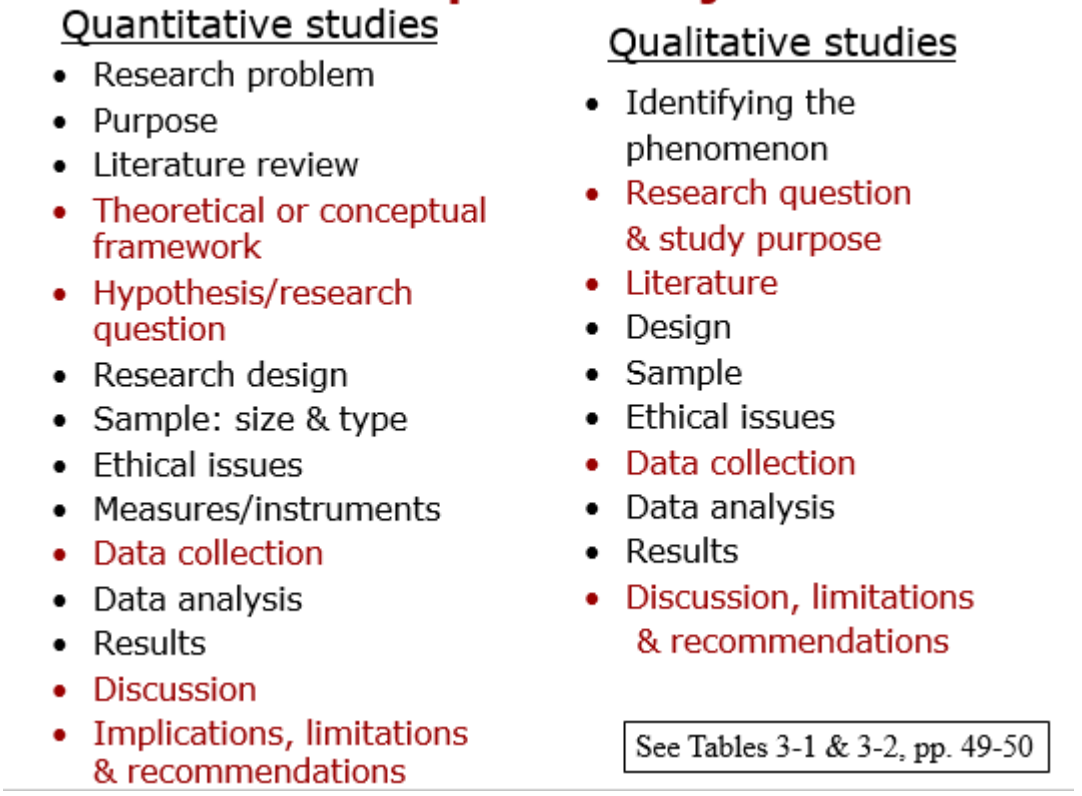
January 15, 2014 02:21 PM

Components of a Research Article

- Abstract
  - Summary of study
- Introduction
  - Not always labeled
  - Typically presents research problem/need for study
  - May include purpose statement
- Literature review and theoretical framework
  - May be presented together or separately
  - Presents summary of main concepts and literature on topic
- Purpose
  - May be in introduction or after literature review
  - The goal of the research
- Question or hypothesis
  - May be under separate heading or in introduction/literature review
  - Qualitative studies do not have hypotheses
- Methods
  - Design, sample, procedures, instruments, ethics
- Results
  - Data analysis
- Discussion / implications
- Conclusions
- References

Reading Journal Articles Critically [differences between quantitative & qualitative]

The research process & journal format



Critical Thinking
"The rational examination of ideas, inferences, assumptions, principles, arguments, conclusions, issues, statements, beliefs and actions"

- Involves disciplined, self-directed thinking
- Includes the display of mastered intellectual skills and abilities, such as applying research critique criteria.

Critical thinking - ACES
A – be aware of your assumptions
C – understand that everything has context
E – explore alternative ways of thinking, feeling, seeing, knowing
S – be skeptical of the 'truth'

★ check side effects

Critical Reading
"An active, intellectually engaging process in which the reader participates in an inner dialogue with the writer"
Critical readers actively look for:
- Assumptions
- Key concepts
- Reasons & justifications

- Supporting examples
- Implications & consequences

Both critical thinking and reading are developed by learning the research process

Critical Reading Process

- Takes a minimum of 3 to 4 readings!
- Four steps:
  1. Preliminary understanding
  2. Comprehensive understanding
  3. Analysis understanding
  4. Synthesis understanding

Preliminary understanding

- Skim abstract and article
- Use your textbook to clarify concepts, terms, assumptions, etc.
- Highlight key terms and sentences
- Highlight steps of research process

Purpose: to get a general sense of the content

Comprehensive understanding

- Continue using text and dictionary to clarify terms and concepts
- Continue highlighting and making notes on article
- State the main idea of the article in your own words.

Purpose: to understand the intent of the researcher(s), the methods used, and the findings.

Analysis understanding

- Critique the article
- Use a set of critiquing criteria
  (e.g. worksheets in Davies & Logan 'Reading Research' pp.56-81)
- How well does the study meet the criteria for each step of the research process?

Purpose: to break the article into parts and understand each part.

Synthesis understanding

- Summarize study in your own words
- Summarize strengths and weaknesses (limitations) in your own words

Purpose: To pull together information and make sense of it.

- How well conducted is the study?

- How useful is the study for your practice?

Keep a record of your work!

Reference	Purpose	Design	Sample	Instruments	Strengths/ limitations	Main findings

Evidence-informed practice
Should you apply the findings from a study to your practice?

- Level of evidence
- Assess the 3 domains:
    - Quality
    - Quantity
    - Consistency

Research Questions

January 22, 2014 11:45 AM

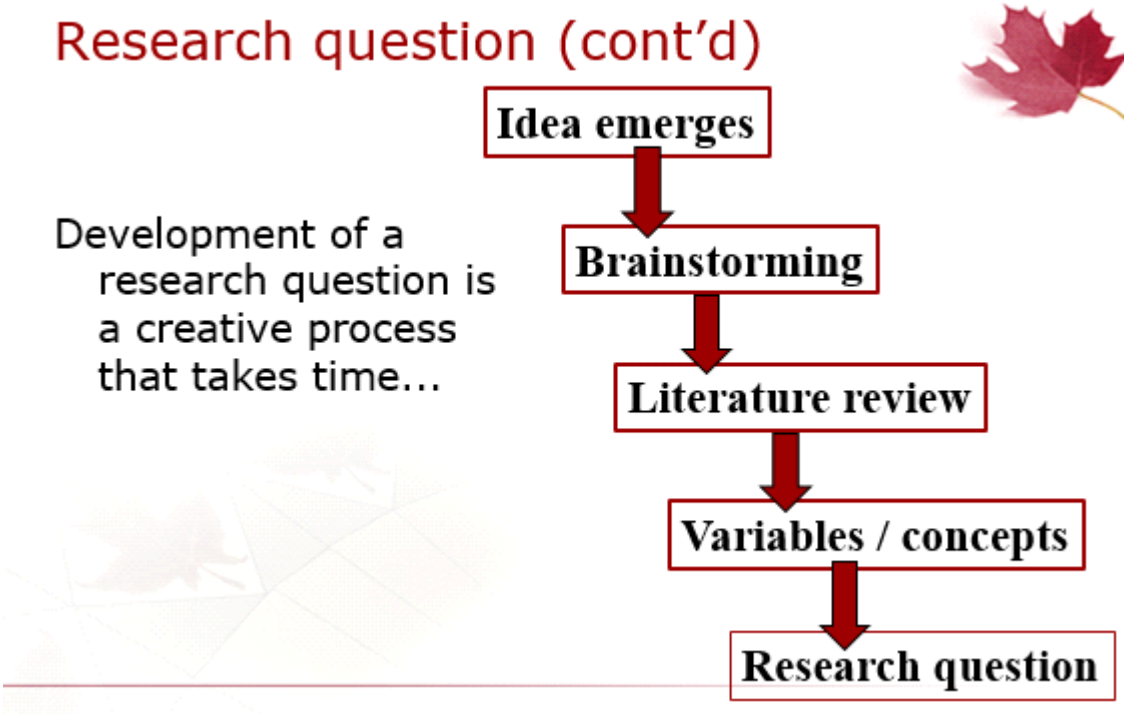
Research and clinical questions

Questions are an initial step in:

1. Research
2. Evidence-informed practice

Research Question (RQ)

- "…presents the idea that is to be examined in the study and is the foundation of the research study"
- A concise, interrogative statement written in the present tense and including one or more variables/concepts
- Develops from the research problem
- A preliminary step in the research process
- Focus on:
  - Identifying the variables / concepts
  - Specifying the population being studied
- Sometimes embedded in the problem statement and/or purpose, aims or goals of the study
- Research design is selected based on the question.



Research questions should reflect that the researchers have:

- ◇ Defined a specific topic area
- ◇ Reviewed the relevant literature
- ◇ Examined the question's potential significance to nursing
- ◇ Examined the feasibility of studying the question
- ◇ The research question is not always explicit…

The research question is not always explicit!

Research question:
What is the difference in the incidence of contractures in comatose patients in relation to frequency of positioning?

Problem statement:
This study investigates the difference in the incidence of contractures in comatose patients in relation to frequency of repositioning.

Purpose statement, aim, goal or objective that the researcher hopes to achieve:
"The overall objective of this study was to assist individuals hospitalized with a persistent mental illness in successful community living. Specific objectives were to determine the cost and effectiveness of a TDM of care and compare the results to those of a standard model of discharge care."

How would you re-phrase this purpose statement as a research question?
(TDM: Transitional Discharge Model)

Another purpose statement example:
The purpose of this study was to evaluate the two-year post-birth infant health and maternal outcomes of an early intervention program of home visitation by public health nurses.

Examples of research questions:
- ◇ Qualitative

How do adolescent mothers perceive and describe their experiences of satisfactory and unsatisfactory inpatient postpartum nursing care?
- ◇ Quantitative

How satisfied are adolescent mothers with their inpatient postpartum nursing care compared to adult mothers?

Qualitative Research Questions

- Includes the phenomenon of interest
- Includes the population of interest
- Process question (grounded theory)
- Meaning question (phenomenology)
- Descriptive question (ethnography: observing, interviewing)
- Questions can be modified throughout the study based upon emerging data.

Examples of qualitative research questions:
What are community-based stakeholders' views on care for pregnant and parenting people?

What are the expressions of caring from the surgical nurses' perspective?

Quantitative Research Questions

- should be further refined to clearly identify 3 characteristics:
  - The population
  - The possibility of empirical testing
  - The study variables

Example of a quantitative research question:
Do mothers and fathers of VLBW infants differ in their level of state anxiety, received support, perceived helpfulness of support, parenting self-efficacy, and sensitivity of their interaction with their infant?

Population
"The entire set of individuals or objects having some common characteristics
(e.g. all RNs in Canada)"

Empirical testing
Implies

- a relationship between an IV and DV should be proposed
- objective
- observable
- measureable

Variables
→ A variable is an attribute or property that varies (people, events, objects)

→ A property that takes on different values and is studied by using quantitative methods

Variables—The X Factor

- Independent variable (IV)
  - □ the variable that has the presumed effect on the dependent variable (DV)
  - □ it is either manipulated or not manipulated

Variables—The Y Factor

- Dependent variable (DV)
  - □ the presumed effect that varies with a change in the independent variable (IV)
  - □ it is not manipulated

Relationships between variables
Is there a relationship between one or more independent variables and a dependent variable?

- Not always cause & effect

- Is X related to Y?
- What is the effect of X on Y?
- How are X and X2 related to Y?

What are the study variables?
"The overall objective of this study was to assist individuals hospitalized with a persistent mental illness in successful community living. Specific objectives were to determine the cost and effectiveness of a TDM of care and compare the results to those of a standard model of discharge care."

X =
Y =

Terms that indicate the question is about a relationship between variables

- ✧ What is the relationship between preoperative anxiety and postoperative pain in patients undergoing elective cholecystectomy?
- ✧ What is the effect of a prenatal nutrition program on the rate of premature delivery in primiparous Aboriginal women?
- ✧ What is the difference in the incidence of falls in elderly patients in relation to the use of side rails?

Defining the variables
"The overall objective of this study was to assist individuals hospitalized with a persistent mental illness in successful community living. Specific objectives were to determine the cost and effectiveness of a TDM of care and compare the results to those of a standard model of discharge care."

- Conceptual definitions: cost and effectiveness
- Operational definitions:
  - □ Health and social service costs
  - □ Quality of life

Quantitative research questions (cont'd)
– Population?
– Empirical testing implied?
– Variables?
"The purpose of this study was to determine whether providing individualized information to men who were newly diagnosed with prostate cancer and their partners would lower their levels of psychological distress and enable them to be more actively involved in treatment decision making."

Hypothesis
- Formal statement of the expected relationship(s) between two or more variables in a specified population that suggests an answer to the research question
- A statement that predicts the outcomes of a study
- Converts the research question into a declarative statement that predicts an expected outcome

Characteristics of a hypothesis
1. Relationship statement
   - Causal: Cause and effect; one in which the researcher can predict that the independent variable causes a change in the dependent variable.
   - Associative: variables related to each other but without implying causation
   - Complex: Relationship between three or more variables
2. Testability
   - The variables must be observable & measurable
   - The hypothesis is either supported or not supported after the

data have been collected and analyzed.

3. Theory base
    - Hypothesis is clearly based on an existing body of theory and/or research findings.
4. Wording of the hypothesis is clear re:
    - Variables to be tested
    - Population to be studied
    - Design to be used
    - Outcomes predicted

Types of hypotheses

- Directional: States which way the relationship should exist
- Nondirectional: States the relationship exists, but not the direction
- Null (H0): Statistical hypothesis
- Research: Alternative hypothesis

Hypothesis - example

"It was hypothesized that in the year following discharge from a psychiatric hospital, individuals participating in the TDM would:

1. Have an improved quality of life; and
2. Incur fewer health and social services costs, compared with individuals receiving standard discharge care."

Clinical Questions

- Derived from clinical practice
- Are the basis for searching the literature
- Consist of 5 components:

– Population
– Intervention
– Comparison
– Outcomes
– Time

PICOT

Refining your clinical question		
P	**P**atient or problem	Define who or what the question is about
I	**I**nterventio	Define which intervention, test or exposure

	n	you are interested in (intervention is planned; exposure happens)
C	**C**ompariso n (if any)	Define the alternative intervention
O	**O**utcomes	Define the important outcomes, beneficial or harmful
T	**T**ime	Define the time involved to demonstrate an outcome

Scenario
A 10 year old girl who has had open-heart surgery has been very ill for 2 days, requiring artificial ventilation and a number of support drugs to maintain her blood pressure. She had developed a small pressure sore at the back of her head.

"How can I prevent further pressure sores from developing in this child?"

Critiquing criteria: The quantitative research question

- Does the question express a relationship between variables?
- Does the question specify the nature of the population being studied?
- Does the question imply the possibility of empirical testing?

Critiquing criteria: The hypothesis
Evaluate the wording for:

- Clarity of statement
- Implications for testability
- Congruence with theory
- Appropriateness for the research design used

Critiquing criteria: The qualitative research question

- What is the phenomenon of interest, and is it clearly stated for the reader?
- Is the purpose of the study clearly stated?

Literature Reviews & Research Ethics

February 3, 2014 09:23 PM

A literature review is:
- a summary of scholarly literature on a topic
- includes a substantial number of references

Overall purpose: *to discover what is known about a topic*

Primary sources (references):
– "…articles and books by the original author." (p. 93)
– Example: a published research study
– Literature reviews should use primarily primary sources.

Secondary sources (references):
– …published (or unpublished) material written by persons other than the original author(s)
– A summary of material; critique; commentary; analysis of a theory, topic, practice
– Example: article about an analysis of a clinical practice

Types of journal articles
1. Peer-reviewed publications (scholarly):
    - Refereed
    - Blind reviewed by external reviewer(s)
    - Judged using a set of criteria
2. Non-peer reviewed literature
    - Clinical practice articles
    - Commentaries
    - Some reviews
3. Grey literature is unpublished

Purpose of the literature review
1. From the perspective of consumers
    - Students
        - Scholarly papers
        - Oral presentations, debates
        - To learn evidence-based practice
    - Nurses in clinical (or policy) settings
        - To implement evidence-based practice
        - To evaluate hospital-based client outcome data

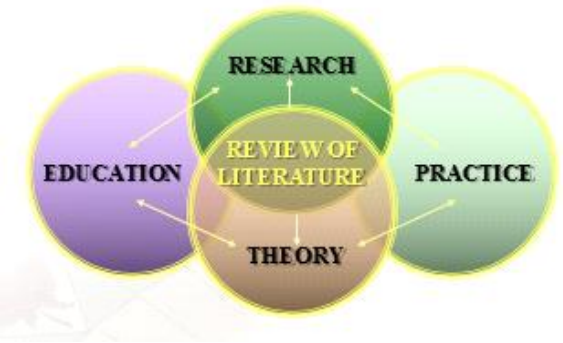
When you (consumer) are critiquing the literature review of a published study, ask:
Have the authors "… presented the knowledge foundation for a sound study and generated research questions…" based on their review of the literature?

2. From the perspective of researchers
    - What is known versus unknown
    - Determine gaps
    - Discover frameworks used to study the problem
    - Generate research questions/hypotheses
    - Helps to narrow design and methods
    - Helps to determine need for replication; revision of interventions; or study protocol

- Synthesizes the strengths & limitations of studies

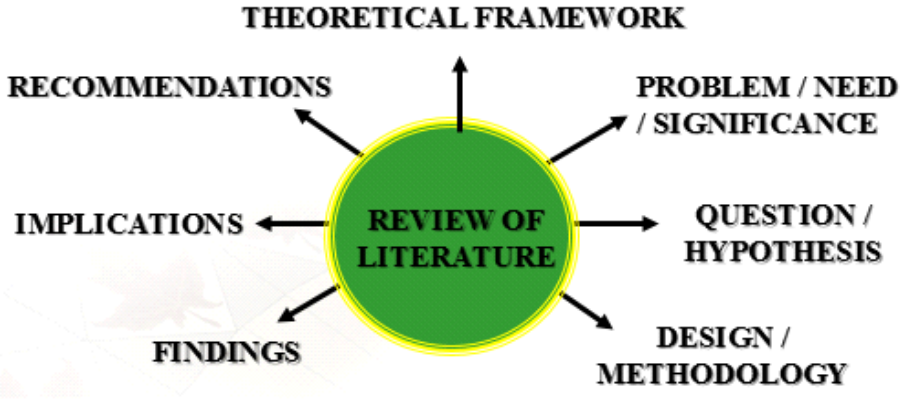
For researchers: a literature review…
- is a key step in the research process
- is a systematic summary and critical evaluation of scholarly literature on a topic / a synthesis of the literature
- adequately represents positive and negative findings of an area
- includes a substantial number of references

Literature Review



Emphasize the importance of the literature review to the development of a research study, and for informing theory building, education, and practice. Discuss how all are linked together.

Literature Review – in primary studies:
Quantitative research
- ◇ Develop conceptual/theoretical framework
- ◇ Problem statement and hypothesis refinement
- ◇ Methodology: design, sample, instruments, procedure
- ◇ Outcome and analysis



Literature Review – in primary studies:
Qualitative Research

<u>Depends on the research design of study</u>:
- literature may be the data source
- review of literature to provide rationale / need for the study
- concepts from literature may provide a framework for the study
- compare study findings with literature to enhance knowledge of the phenomena of study

Systematic Literature Reviews
- ◆ Specific kind of literature review that uses rigorous methods to identify, critically appraise, and synthesize primary studies

- Provides best available evidence on a topic
- Consumer can filter this evidence through own evidence-based practice lens (patient preferences and clinical expertise/judgment)

Types* of systematic reviews:
– Systematic review: a rigorous and thorough review of quantitative studies
– Meta-analysis (quantitative): results from multiple studies are synthesized to make conclusions
– Integrative review: synthesis of quantitative and qualitative study findings
– Meta-synthesis (qualitative): a systematic review of qualitative studies
* often identified in the title of the article

Your role – as a consumer:
Critiquing the literature review
- ✧ Organized and systematic
- ✧ Well referenced
- ✧ Critical appraisal is evident
- ✧ Mainly primary sources reviewed
- ✧ Synthesis that describes the overall strengths & limitations of the body of literature reviewed
- ✧ Provides clear rationale for the study reported in the article
- ✧ Purpose, research question(s) and/or hypotheses are identified

Research ethics

The Research Process

Nsg Process	Quantitative	Qualitative
Assessment	Research problem Purpose Literature review	Identifying the phenomenon
Diagnosis	Theoretical or conceptual framework Hypothesis/research question	Research question & study purpose Literature
Plan	Research design Sample: size & type Measures/instruments **Ethics Application**	Design Sample **Ethics Application**
Implement	Data collection	Data collection
Evaluate	Data analysis Results	Data analysis Results
Revise	Discussion Implications, limitations & recommendations	Discussion, limitations & recommendations

Historical Ethical Violations:
- ○ Cameron's LSD and brainwashing studies in Montreal (1950-1960s)
- ○ Jewish chronic disease study (1965)
- ○ San Antonio contraceptive study (1969)
- ○ Untreated syphilis in Black males (1932-1973)
- ○ Willowbrook Hospital—hepatitis studies (1972)
- ○ Ivory Coast AIDS/AZT studies (1994)
- ○ Studies with First Nations peoples

- Notice – in most of these cases….Vulnerable populations were used/abused for the purpose of research
- Led to the formation of ethical standards for research
- Notion that - The standard for ethical behaviour is higher than legal behaviour

Learning from these ethical violations
- 10 articles of the Nuremberg Code
- 3 ethical principles that underlie all biomedical and behavioural research involving human subjects
    - Respect for persons
    - Beneficence
    - Justice

CNA's Code of Ethics, 2008
1. Promoting safe, compassionate, competent, and ethical care
2. Promoting health and well-being
3. Promoting and respecting informed decision-making
4. Preserving dignity
5. Maintaining privacy and confidentiality
6. Promoting justice
7. Being accountable

Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS-2), 2010
• Research can benefit human society
• To maximize benefits, researchers need academic freedom
• With academic freedom, comes responsibility
• Also responsibility of institutions to uphold academic freedom & high ethical, scientific & professional standards

Basic Human Rights
• Right to self-determination
• Right to privacy and dignity
• Right to anonymity and confidentiality
• Right to fair treatment
• Right to protection from discomfort and harm

How are principles applied to protect human rights?
- Research ethics boards (REB)
- Informed consent
- Special considerations for vulnerable groups

Research Ethics Boards (REBs)
Review research projects and assess that ethical standards are met in relation to the protection of the rights of human subjects
1. At least five members of various backgrounds to promote complete and adequate project review
2. Members qualified by virtue of expertise, experience, and reflect professional, gender, racial, and cultural diversity
3. Membership must include one member whose concerns are primarily non-scientific (lawyer, member of clergy, ethicist)
4. At least one member from outside the institution (community member)
5. REB members have mandatory training in scientific integrity and prevention of scientific misconduct, as do principal investigators of a research study and research team members
6. REB is responsible for protecting subjects from undue risk and loss of personal rights and dignity

REB Role
• Assessing recruitment: Is it fair?
• Evaluating inclusion and exclusion criteria
• Investigator-subject relationship
• Consent: Maximize autonomy
• Additional protections
• Assessing risk and benefit
• Assessing consent forms and process

REB Approval Categories
- ✧ Exempt: Low risk, non-vulnerable, non- sensitive, short duration (6 categories; e.g., educational
- ✧ Expedited review: Minimal risk (no substantive increase beyond risks of ordinary life), non-vulnerable, non-sensitive topic (9 categories; e.g., chart review, questionnaires)
- ✧ Full board review
    - All members participate and review
    - All members participate in discussion and make comments
    - Decision is rendered by a majority of assembled quorum
    - No member has a conflict of interest

REB Approval Criteria
- □ Risks minimized
- □ Risks balanced by benefits
- □ Subject selection equitable
- □ Procedures for obtaining informed consent
- □ Procedures for consent documentation
- □ Data monitoring provisions
- □ Privacy and confidentiality measures
- □ Safeguards for vulnerable subjects

REBs: Risk Assessment
- Probability of harm occurring as a result of participation
- Quantified by probability and magnitude
- Types: Social, legal, physical, economic, psychological
- May apply to individual or society

REBs: Benefit Assessment
- Valued or desired outcome, an advantage
- Quantified by probability or magnitude
- Types: Medical, psychological, kinship
- May apply to individual or society

Informed Consent Process
<u>Does NOT Equal</u>
the Informed Consent Form!

What it is:
– Ongoing process of communications and mutual understanding
– Shared responsibility for protection

What it is not:
– Piece of paper
– Moment in time

– Legal contract

Elements of Informed Consent
• Purpose of research
• Voluntary participation
• Expected duration for subject
• Description of procedures
  ✧ Identification of experimental procedures
  ✧ Random assignment
• Reasonably foreseeable risks or discomforts
  ✧ How can risks be minimized?
• Reasonably foreseeable benefits for subjects or others
  ✧ How can benefits be maximized?
• Alternative procedures or treatments
• Confidentiality
• Payment
• Who has access to records?
• Special qualifications of investigator
• Who can answer questions
  ✧ About study and research-related injuries
  ✧ About subject's rights
• If subjects exposed to an intervention, consent may include:
  ✧ May involve unforeseeable risks
  ✧ Compensation for research-related injury
  ✧ Situations where researcher can terminate subject's participation
  ✧ Any additional costs
  ✧ Consequences and procedures for subject's early withdrawal
  ✧ Revelation of new findings

Comprehension
– Not valid unless subject understands
– Responsibility for understanding rests with researcher, who must consider:
– Nature of population
– Type of information
– Circumstance and timing
– Language and culture

Special Considerations
• Vulnerable subjects
– Children
– Prisoners
– Mentally- disabled persons
– Economically disadvantaged
– Educationally disadvantaged
– Other vulnerability: language, culture, pregnancy, students, employees, substance abuse, health status (i.e. palliative care)

Quantitative Research: Part 1

February 25, 2014 06:55 PM

Quantitative research:
"The process of testing relationships, differences, and cause-and-effect interactions among and between variables. These processes are tested with hypotheses and research questions through the use of objective, precise, and highly controlled measurement techniques to gather information that can be analyzed and summarized statistically."

Predict – Explain – Measure – Compare – Difference – Relationship – Causality – Evaluate

Quantitative research: Concepts
• Objectivity
• Accuracy
• Control
• Validity
• Feasibility

The Research Design
- Describes the overall plan ('recipe') to answer the research questions/test hypotheses
- Selected by researcher based on:
  - the best 'fit' with the research problem/question(s)
  - Feasibility
  - maximizing control, validity
- Not always explicitly stated in articles but reader/consumer should be able to identify the study design

Control
"…involves holding the conditions of the study constant…"
"…is accomplished by ruling out extraneous variables (mediating variables) as an explanation for the study's outcome."

- Homogeneous sampling
- Constancy in data collection
- Manipulation of the independent variable
- Randomization

Validity
- Are the results of the study valid?
  - Are the results precise?
  - Did the researcher(s) measure what they intended to measure?
- Internal validity
- External validity

Internal validity
"…the degree to which the experimental treatment, not an uncontrolled condition, resulted in the observed effects…"
– Is it the independent variable (or something else) that caused the change in the dependent variable?

…is established when the researcher(s) have ruled out other factors (threats) as rival explanations of the relationship between the variables.

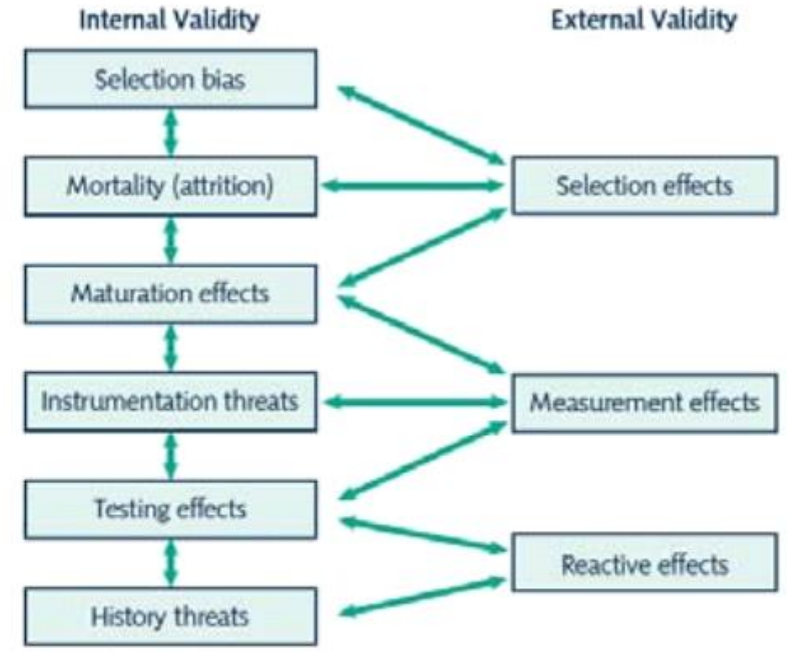
Threats to internal validity:
– History
– Maturation effects
– Testing effects
– Instrumentation
– Mortality (attrition)
– Selection bias

External validity
"…concerns the generalizability of the findings to additional populations."
"To achieve external validity, variation in the conditions and the types of participants should lead to the same results."

Therefore, can be a challenge for researchers to design a study that maximizes both the internal and external validity.

Threats to external validity
• Selection effects (biased sample selection)
• Reactive effects (ie: Hawthorne effect)
• Measurement (testing) effects (e.g. pre-testing)

Critical thinking decision path:
Potential threats to a study's validity



Distinguishing between internal & external validity
- Threats to internal validity
  - How does the threat relate to the independent and dependent variables?
  - Within the study
- Threats to external validity
  - How does the threat relate to the ability to generalize the findings outside of the study?

Critiquing criteria – Study design (quantitative)
Is the design stated or easily identifiable?
Is the study design appropriate?
– best fit with research question, framework, literature review, hypothesis?
– best fit concerning objectivity, control, validity and feasibility?
– how are the threats to internal validity and external validity minimized?
Were the levels of evidence hierarchy considered in the design selection?

QUANTITATIVE DESIGNS __ Chapter 10: Experimental and Quasiexperimental

Experimental designs
1. True experimental (pretest-posttest control group) design
2. Solomon four-group design
3. After-only design

Quasiexperimental designs

1. Nonequivalent control group design
2. After-only nonequivalent control group design
3. One group (pretestposttest) design
4. Time series design

Designs: Experimental & Quasiexperimental
• Ideal designs for testing the efficacy and/or cost-effectiveness of interventions
• Not limited to passive observation
• Involves active manipulation / intervention
• Findings provide the evidence for what works in clinical practice and provides the rationale for changing practice
• Suitable for testing cause and effect relationships b/c they eliminate alternative explanations

Cause-and-effect

Three criteria must be met to infer causality:
1. The causal variable and effect variable must be associated with each other;
2. The cause must precede the effect;
3. The relationship must not be explainable by another variable.

How confident are you that the independent variable caused the desired effect on the dependent variable (outcome)?
• Dependent on how well the researcher controlled the other variables that explain the outcome.

The *gold standard* to determine *causality*:

Experimental design

= True or Classic experiment
= pre-test/post-test control group design
= Randomized controlled trial (RCT)

Three identifying properties:
1. Randomization
2. Control
3. Manipulation

1. Randomization

- Subjects randomly assigned to the experimental or control group
- Equal chance of being assigned to either group
- Eliminates systematic bias
- Ensures that the groups are similar with respect to characteristics that might otherwise have an effect on the outcome (ex: education, age, sex)

2. Control

- Introduction of constants - Manipulation of the independent (causal) variable
  - Random assignment of subjects to a group
  - Detailed experimental protocols
  - Comparison groups (control group that receives usual care)

3. Manipulation

- Researcher manipulates by giving the experimental treatment (intervention) to some but not all subjects
- May give different amounts of the intervention
- Examples of independent variables
  - → Medication
  - → Teaching
  - → Program
  - → Referral

Internal validity: the degree to which the experimental treatment, not an uncontrolled condition, resulted in the observed effects

Reduces threats to internal validity: other (extraneous) variables that might explain the effect on the dependent variable (outcome)

- Antecedent variables – threat reduced d/t random assignment to groups
- Intervening variables – occur during study, may threaten internal validity

Symbolic notations to describe quantitative designs:
R = random assignment to groups
O = data collection (observation) of the dependent variable
O_1 = pre-test data collection
O_2 = post-test data collection
X = represents the exposure to the intervention

Experimental designs
1. True or classic experiment
2. Solomon four-group design
3. After-only experimental design

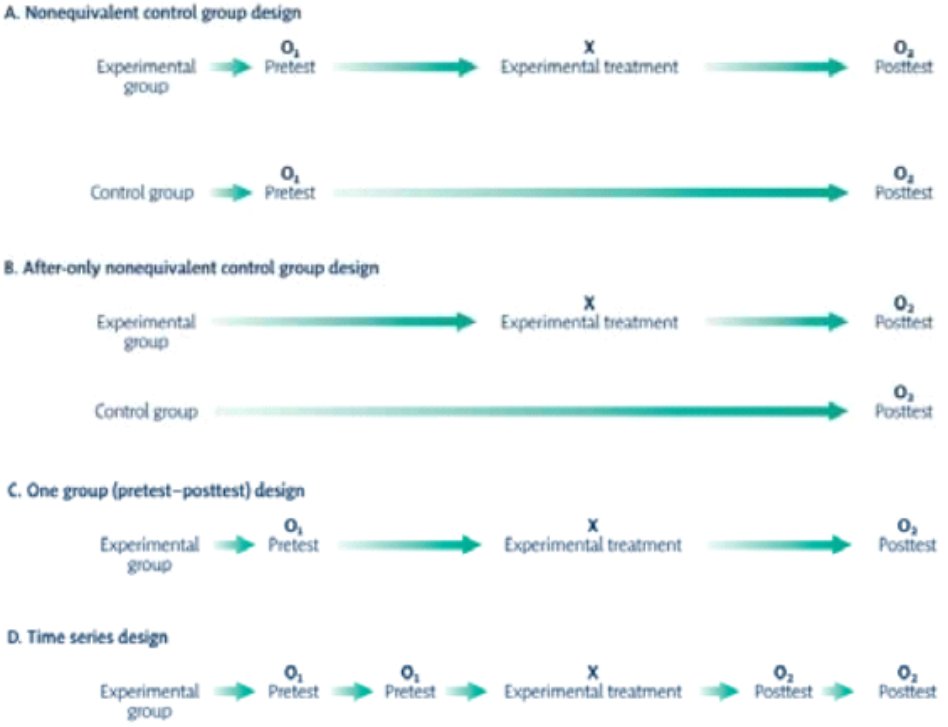
<u>Experimental designs</u>
Advantages:
• Minimizes threats to internal validity
• Provides high quality evidence for the effectiveness of interventions

Disadvantages:
• Requires identification of all relevant variables
• Some variables are not amenable to experimental manipulation
• Subjects may drop out
• Can be difficult or impractical (not feasible)

<u>Quasiexperimental designs</u>
• Involves manipulation
• Full experimental control is not possible
• Some characteristic of a true experiment is missing – usually randomization
• Weakened confidence in making causal assertions

1. Nonequivalent control group design

2. After-only nonequivalent control group design
3. One group (pre-test, post-test) design
4. Time series design



Quasi-experimental designs

Advantages:

• Often more feasible than experimental design
• May be the only way to evaluate some interventions

Disadvantages:

• Less confidence in inferences between cause and effect than experimental designs

Which design would you use and why?

Research question:

What is the difference in mood state between elderly nursing home residents who receive pet therapy and those who do not?

Hypothesis:

Elderly nursing home residents who receive pet therapy demonstrate more positive mood states than those who do not.

QUANTITATIVE DESIGNS __ Chapter 11: Nonexperimental

Quantitative research: Nonexperimental designs

Survey studies
1. Descriptive
2. Exploratory
3. Comparative

Relationship or difference studies
1. Correlational
2. Developmental
   – Cross-sectional
   – Longitudinal or prospective
   – Retrospective or ex-post facto

Nonexperimental designs

"...are used in studies when the researcher wishes to :

• construct a picture of a phenomenon;
• examine events, people, or situations as they naturally occur; or
• test relationships and differences among variables".

"Non-experimental designs may enable the researcher to understand how a phenomenon occurs at one point or over a period of time."

Nonexperimental designs explore the relationships or the differences among variables.

Independent variable
• is not manipulated
• occurs naturally
• often cannot be controlled by the investigator

Control is demonstrated in other ways:
Nonexperimental designs:
- ✧ Survey studies
- ✧ Correlational studies
- ✧ Developmental studies (use a time perspective)
    1. Cross-sectional design
    2. Longitudinal or prospective design (repeated measures)
    3. Retrospective design (ex post facto)

Survey Studies
- To collect data about existing variables
- To obtain information from a group or population about a topic of interest
- To determine the frequency of a phenomenon or behaviour;
- May be used to compare differences between variables
- Not used to determine causation
- Types of variables include:
    - Opinions, attitudes, facts (ex: income level, occupation, educational level)
- Advantages:
  economical & accurate method of collecting information from a large sample/population
- Disadvantages:
  superficial information; questionnaire construction, testing
- Examples: Statistics Canada Census

Table 1. Demographic comparisons of class and survey participants.

Demographic	Class	Survey
Ethnicity		
Caucasian	70%	78%
Black or African American	6%	4%
Hispanic or Latino/Latina	5%	1%
Asian or Asian American	10%	8%
Am Indian, Pac Islander, Alaska Native	7%	6%
Other	2%	3%
Gender		
Male	37%	27%
Female	63%	73%
Class		
Freshmen	56%	66%
Sophomore	27%	27%
Junior	11%	4%
Senior	6%	3%
Special	1%	0%

Correlational Studies
- □ Used to examine the relationship between two or more variables.
    - – Do the variables co-vary?
    - – How strong is the relationship between the variables?
    - – Is it a positive or negative (inverse) relationship?

• Correlation does not infer causation

Developmental Studies

Useful when investigators are concerned with the existing status, the relationship, or differences among variables at one point in time,
AND
Changes that result from elapsed time.

• Developmental studies are non-experimental designs that use a time perspective

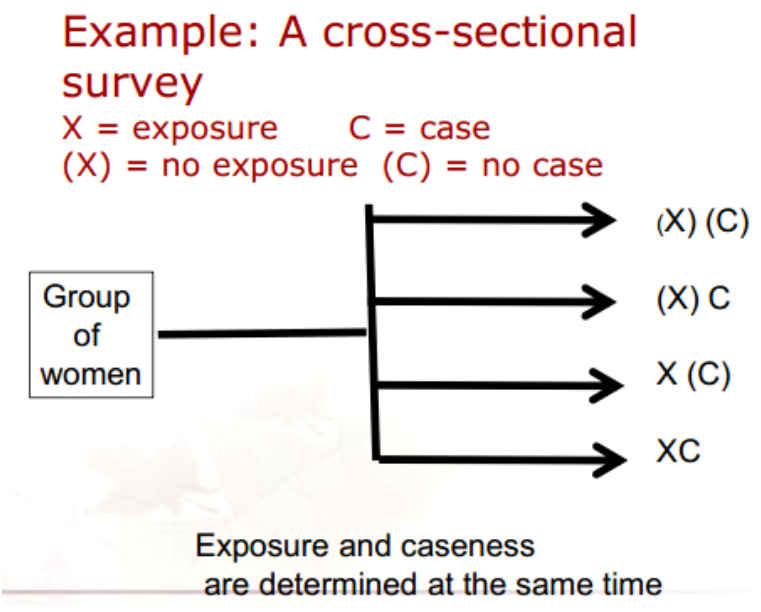
Cross-sectional design
- Examines data at one point in time
- May collect data from two different groups (cohorts) at the same point in time
- Can explore relationships (correlations), differences (comparisons), or both

Longitudinal or prospective design
- Collects data from the same group(s) (cohorts) at different points in time
- Also explore differences and relationships

Ex post facto or retrospective design
- Investigator attempts to link present events with past events
- The dependent variable has already been affected by the independent variable
- Explores differences between variables

A cohort study…
"…compares two or more different groups over time"
Prospective cohort – "follows people over time"
Retrospective cohort – "refers to previous happenings, often involving the use of past health care records"

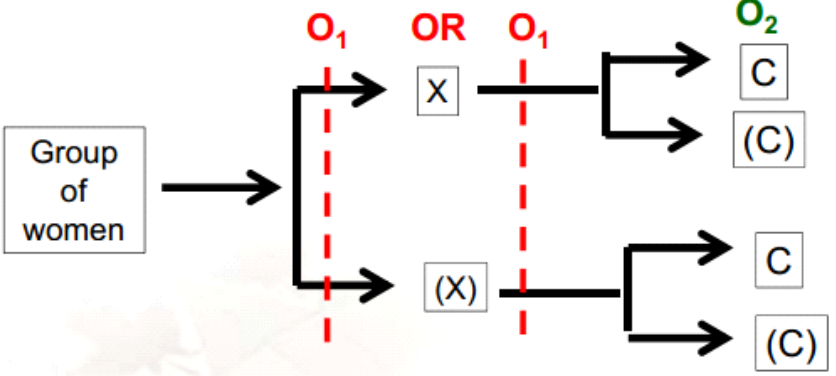
Nonexperimental designs
- Statistical techniques can be used to establish predictive or causal links
  - Causal modelling
  - Path analysis
  - Analysis of covariance
  - Hierarchical linear modelling
- Other types of quantitative studies
  - Methodological research (ex: psychometrics)
  - Meta-analysis
  - Secondary analysis



Example: Cohort study design

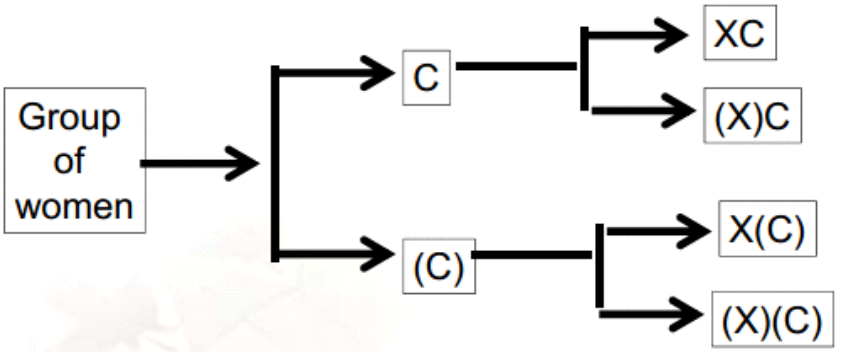
X = exposure
(X) = no exposure

C = case
(C) = no case



Subjects are divided into groups based on exposure (treated) and non-exposure (untreated) based on natural course of events

Example: A case-control design



The groups are identified based on the outcome (case).
The search for exposure is retrospective.

Qualitative Research: Part 1

April 13, 2014 12:07 AM

What is Qualitative Research?

"Qualitative Research is a systematic, interactive and subjective research method used to describe and give meaning to human experience"

"...qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them."

What is the difference between an illness and a disease?
➳ Since not everyone experiences diseases the same, qualitative research will help

Disease: A disease is an alteration of the mental and/or physical structure of the human body or mind.

Diseases can have numerous causes:
- Biological (like viruses)
- Chemical (like drugs or heavy metals)
- Genetics
- Physical agents (like temperature extremes)
- Alterations in immunity or metabolism (like allergies or hormonal disturbances)

Illness: An illness refers to the human response to disease (i.e. the experience)

It includes:
- Experiencing signs and symptoms
- Assuming the sick role, or validating the sickness
- Seeking medical care
- Assuming dependent role while recovering

For example: stress can induce more symptoms of an illness

Do we all experience illness the same way? Do we all experience the same treatments in the same way?
➳ Cannot provide a proper treatment if don't know what the patient's personality is, their personal experience, what they like/want... etc.

- Cancer
- Diabetes
- Rheumatoid Arthritis
- The common cold

Cancer

Research: A biopsychosocial perspective on the experience of lung cancer (Raleigh, 2010)

Purpose:
This article examines the effects of an individual's smoking status (current, former, or never-smoker on the biological, social, and psychological aspects of lung cancer.

Findings:
Current & never-smokers differ in their biological risk factors, responses to treatment, and survival rate.

But why?
- Biological Aspects
- Social Aspects
- Psychological Aspects

Biopsychosocial Medicine
The biopsychosocial model is both a philosophy of clinical care and a practical clinical guide.

- Philosophically, it is a way of understanding how suffering, disease, and illness are affected by multiple levels of organization, from the societal to the molecular.
- At the practical level, it is a way of understanding the patient's subjective experience as an essential contributor to accurate diagnosis, health outcomes, and humane care.
- In this article, the authors defend the biopsychosocial model as a necessary contribution to the scientific clinical method, while suggesting 3 clarifications…

Scientific Model: everyone experiences illness the same way = same treatments
Biomedical Model: the "scientific clinical method"
Biopsychosocial Model: person-centred approaches to care

Diabetes
Research: Biopsychosocial Factors Affecting Metabolic Control Among Female Adolescents With Type 1 Diabetes (Jack, 2003)

Purpose:
This review discusses important biological, psychological, behavioral, and sociocultural factors that must be considered when providing diabetes care

Findings:
For this population, important psychological and behavioral factors include stress and coping, depression, intentional health-compromising behaviors, and eating disorders while sociocultural factors include peer pressure and family interaction

Pain (Bendelow, 2013)

The Biomedical approach to pain
"on a scale of 1 to 10, how much does it hurt?"
VS.

Biopsychosocial approach to pain

"can you describe your pain for me?"

Qualitative Research

- Treating or alleviating pain is a primary role of medicine
- What actually constitutes pain is subjective, value-laden, and difficult to define objectively and empirically
- The experience of Pain is physiological, cultural and has multiple interpretations

"Biomedical theories of pain concentrate upon its neurophysiological aspects in both diagnosis and treatment. Hence, scientific medicine reduces the experience of pain to an elaborate broadcasting system of nerve signals, rather than seeing it as molded and shaped by the person who is experiencing it and his or her particular sociocultural context."
➳ Sometimes we cannot feel the difference between pain and something (ex: being in love and having a heart attack)

"The biomedical concept of pain is unsophisticated and oversimplified, often resulting in physicians' doubting the veracity of patients' reports of pain and the marginalization of such patients. We must incorporate engagement with the social and emotional context into medical understanding and treatments of pain to fully encompass its complex nature."

⇒ Qualitative Research is discovery oriented
  - Explanatory and descriptive in nature
⇒ Words (i.e. texts) as opposed to numbers are used to explain phenomenon
⇒ Qualitative research lets us see the world through the eyes of another
⇒ It allows us to explore the connections between the social, psychological and physiological connections between illness, disease and health from the perspective of individuals

What do Qualitative Researchers Believe?

✧ Multiple realities
✧ Reality is *socially constructed* (i.e. social constructivist paradigm) and *context dependant* (what an individual sees is dependant upon who that individual is and what experiences that individual brings to the situation)
✧ Discovery of meaning is the basis of all knowledge
✧ Qualitative researchers must describe the phenomenon under study

★ But… more importantly, the first question any researcher should ask is…. **"When should I use quantitative approaches vs. qualitative approaches?"**

When to use…

Qualitative [specific]	Quantitative [general]
Individual	Population
Personal cases	Clinical trials

What type of research questions would use qualitative methods when compared to quantitative methods?
➳ Qualitative methods would use more open-ended questions

Qualitative Research:
- Design
- Methods
    - Sampling
    - Data collection
    - Data analysis

Qualitative Research Design
• Paradigm: social constructivist
• Embraces the wholeness of humans
• Focuses on the human experience & the meaning attributed to it;
• Based on view that meaning varies and is subjective
• Goal is to see (understand) the world as others perceive it

Qualitative Research Methods
• Sample: Small number of participants
• *Data Collection:* is most often text/words and occurs in naturalistic settings
• Importance of context
• Researcher as 'instrument'
• Many different research designs

What is Qualitative research used for?
1. Guides practice
    - Subramanian et al.(2011)
2. Contributes to instrument development
    - Cohen & Leis (2002)
3. Contributes to theory building
    - Cranley et al.(2012)
4. Other

Example #1: Guiding practice (Subramanian et al., 2011)
Challenges faced by nurses in managing pain in a critical care setting

Aim: To explore nurses' challenges in managing pain among ill patients in critical care.

Background:
- Pain can lead to many adverse medical consequences and providing pain relief is central to caring for ill patients.
- However, the challenge faced today by many critical care nurses is providing effective pain relief, whilst simultaneously coping with life threatening situations among critically ill patients.
- Although pain issues have been explored and researched extensively, little attention has been focused on challenges in pain management.

Research Questions:

- If studies on critical care have confirmed that pain is still a major problem amongst critically ill patients, how can pain management be delivered affectively given the advances in pain management theory?

Purpose:

- The aim of this study is to investigate the challenges faced by critical care nurses in an acute health care organization (Midlands, UK) in implementing pain management in an adult critical care unit.

Methods:

- A qualitative design was used to understand nurses' perceptions of the challenges in pain management in critical care.

Why did the authors choose to conduct a qualitative study say from a quantitative study?
This research elicited nurses' descriptions of their own experience and challengers in managing acute pain to guide clinical practice

Findings:
Four main themes were identified, which represent the strengths and limitations of the current pain management practice in this unit and demonstrate whether there is a need for clinical practice guidelines on the pain management:

1) Decision Making
2) Availability of clinical guidelines
3) Patient Management
4) Pain Assessment

Conclusions and Implications:

- The need for strategies for effective pain management (i.e. standardized guidelines that include pain management training in decision making, patient management and pain assessment)
- Clinical practice guidelines relating to pain assessment and management are a particular necessity for nurses and other health professionals to assist them in clinical decision making
- The findings of this study have contributed to understanding nurses' challenges in pain management of critically ill patients.
- Providing nurses with clinical updates on pain management may contribute to effective pain management, since updates will increase their knowledge on current pain management practices.
- The development of pain management guide- lines in a local context will help nurses in taking up this role as a way forward in pain management.

Example #2: Instrument development (Cohen & Leis, 2002)

What Determines the Quality of Life of Terminally Ill Cancer Patients from their own Perspective?

Background:

- Although several instruments have been developed to measure quality of life (QOL) of palliative

cancer patients, a rigorous research study has not specifically asked patients themselves what is important in QOL.
- It is therefore not clear if these measure what is important to patients' QOL

Purpose:
To be able to evaluate the validity of existing QOL questionnaires for palliative care patients with cancer (for whom the primary goal of treatment is to improve QOL) by developing a comprehensive list of the determinants of the QOL of cancer patients receiving palliative care.

Research Question:
What do you think the primary research question is for this study?

Methods:
- A qualitative paradigm was chosen because the primary purpose of this study was to describe and discover rather than test an hypothesis
- Interviews and semi-structured interviews were used to determine what palliative care cancer patients considered to be important in their own QOL
- In addition, focus groups of family care givers and health care providers were conducted to determine what they thought contributed to the patients' QOL

Why do you think these focus groups were conducted? Why are they important?

Findings:
- Identified 5 domains:
  - Own state: physical condition, physical functioning, psychological state, psychological functioning)
  - Quality of palliative care: The quality of care participants received had a great impact on their QOL.
  - Physical environment: Participants talked about how their environment influenced their QOL. One large category in this domain was whether or not the participant felt they were in the right place, be it at home or in a palliative care unit.
  - Relationships: Support, communication, change of role, being a burden, growing close or more distant through crisis
  - Outlook: Describes the way in which the person approaches this difficult phase in life. Given the same set of physical circumstances, QOL could be described as terrible or quite good depending on the person's "outlook".

Implications:
- Revised the MQOL (quantitative) instrument
- More relevant to population of interest

Example #3: Theory building (Cranley et al., 2012)
Recognizing and Responding to Uncertainty: A Grounded Theory of Nurses' Uncertainty

Background:
- There has been little research to date exploring nurses' uncertainty in their practice.

- Understanding nurses' uncertainty is important because it has potential implications for how care is delivered.
- Largely absent from this literature is a theoretical understanding of how nurses' experience uncertainty. Because nurses act on the basis of their decisions, and decisions have implications for patient outcomes, it is important to understand nurses' uncertainty in their daily practice

Purpose:

- The purpose of this study is to develop a substantive theory to explain how staff nurses experience and respond to uncertainty in their practice.
- The aim of the study was to further understand how nurses experience uncertainty and seek information when uncertain.

Methods:

- A grounded theory approach was used to guide this study
- Grounded theory was used because there lacks a well-developed theoretical understanding of the phenomenon of uncertainty in nurses' practice from their perspectives
- Grounded theory emphasizes the importance of perception, meaning, action/interaction, and context involved in understanding a phenomenon
- Individual face-to-face interviews were con- ducted with nurses using a semi-structured interview guide.
- Interviews were audio-recorded, transcribed verbatim, and checked for accuracy. Constant comparisons were used to analyze the data.

Findings:

Nine main categories interrelated as conditions, actions and interactions, and consequences forming the substantive theory recognizing and responding to uncertainty

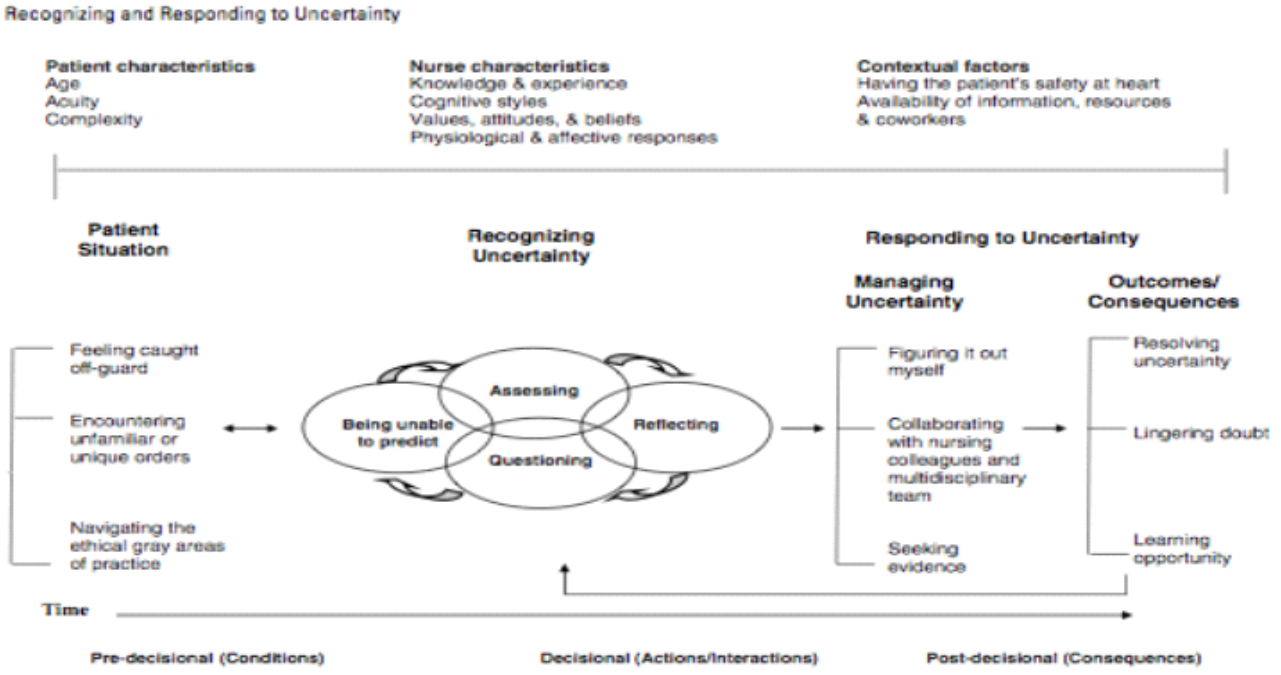


Figure 1. Recognizing and responding to uncertainty

Note. The arrow originating from the consequences categories denotes that having lingering doubt or learning from uncertainty initiated a feedback loop to the processes involved in recognizing and responding to uncertainty. The bar under patient, nurse, and contextual characteristics illustrates that these were factors that influenced the processes involved in recognizing and responding to uncertainty.

Application:

- The theory recognizing and responding to uncertainty expands our understanding of patterns of knowing in nursing, in particular, the pattern of unknowing.
- Nurses in this study perceived uncertainty when they realized that they did not know or understand some aspect of the patient situation.
- This theory contributes to nursing knowledge an understanding of how uncertainty is manifested and responded to in nursing practice.
- Study findings advance nursing science by describing uncertainty from nurses' perspectives. The theory adds to our understanding the processes involved in recognizing uncertainty, strategies and outcomes of managing uncertainty, and influencing factors.
- This theory is relevant and useful to nurses who are faced with complex clinical decisions, managers who support nurses in their decision-making, and researchers who investigate ways to improve decision-making and care delivery.

Qualitative Research Designs

Key Qualitative Research Designs:

- Phenomenology
- Grounded theory
- Ethnography
- Case study
- Historical
- Descriptive qualitative
- Participatory action

Phenomenology

- From philosophy
- A research method aimed at understanding the meaning of the experience as it is lived by the participant.
- Used to answer questions of personal meaning;
- The 'lived experience'
- Based on a critique of positivism
- There is a shared essence in how we experience phenomena
- (Bracketing) is sometimes used.

Good fit when:

- Understand an experience the way those who have lived through it do
- Little existing research or needing a new perspective
- "What is the lived experience of…?"
- Sample
- Data –1:1 interviews
  - Small # of open-ended questions
- Findings descriptive with quotes & final synthesis or 'essence'

Phenomenology: Example

Doumit et al.(2010). Living with breast cancer. European Journal of Oncology Nursing. 14, 42-48.

Aim:

- The purpose of this qualitative phenomenological study is to provide in-depth understanding of the experience of Lebanese women living with breast cancer.

Background:

- Breast cancer is the most frequently diagnosed cancer in women worldwide. In Lebanon, a country of 4 million people, breast cancer is as well the most widespread type of cancer among Lebanese women.
- The meaning of cancer diagnosis, the meaning of childbearing and femininity all have cultural bases in Lebanon. The international literature lacks information on how Lebanese women live with breast cancer when compared with women of other cultures

Method:

- Purposeful sampling
- Theoretical saturation
- Interview, audio-taped and transcribed verbatim

Findings:

- Four major core themes describing the participants' lived experience emerged from the interviews:
  - Living with losses
  - Living with guilt feeling
  - Living with fears and uncertainty
  - Living with the need to know and to share that knowledge

Conclusions and Application:
The experience of Lebanese women with breast cancer revealed distinctive themes not reported by other women from other cultures. The results of this study challenge health care providers and educators to be aware of the difficulties that Lebanese women are facing when they are living with breast cancer.

Living with losses

Tina a 48-years-old woman said: "After 15 days of the first chemo while I was combing my hair it started to fall. Though I knew it was coming, though I knew about it before but for me it created a problem. It made me feel anxious, I became nervous I started to feel disturbed and tried to foresee myself without hair. I looked at the pillow case and it was full of hair, on the floor everywhere so I wished somebody told me to shave it before seeing it like this, better for me to shave it rather than seeing it like this. I felt very disturbed. How am I going to appear now, ugly, so this subject annoyed me a lot"

Living with fears and uncertainty

Kathy, a 44-year-old lady, spoke about her feelings of fear of reoccurrence and uncertainty with emotions and said: "Now the thing that I am most scarred of is that it might come back. This is the thing that I think of the most and I keep searching the internet. I feel all the time that there is a high probability that it might come back. You feel scarred all the time that maybe after many years, 5

years 7 years, it might happen again."

Grounded Theory

- From sociology, 1967;
- Purpose is to go beyond description of an experience and to generate a theory about basic social processes (interaction);
- A grounded theory is constructed inductively;
- The theory is 'grounded' in data from participants who have experienced the process;
- Inductive vs 'off the shelf' theory;
- Multiple 'schools of thought' or approaches (leaning either more to positivist vs constructivist)
- Some literature review prior to data collection.

Good fit when:

- Theory is not available to explain a process;
  - "How do individuals experience the process of XXX?"
  - "How does the process of XXX unfold?"
- Data is most often interviews
  - # dependent on 'saturating' the model
- Systematic method of data analysis;
- Findings reported using descriptive language & quotes
- Theory is often illustrated in a figure.

Grounded Theory: Example

Empowerment in Cancer Survivorship Care (Avery, PhD candidate)

Background:

As the screening and treatment of cancer has improved….

- Psychosocial and supportive care needs are not fully acknowledged contributing to the physical and psychological morbidity, poor quality of life, and may lead to further disability, all impacting the rehabilitation of cancer survivors
- The rise in interdisciplinary survivorship programs designed as collaborative spaces for research into health, wellness and cancer survivorship.
- An area of research that has emerged from these developments has focused on the innovation and assessment of evidenced based practices in the delivery of patient-centred care.
- However according to a number of systematic reviews and a large breadth of exploratory research in patient-centred care, the idea of patient-centred care remains poorly understood.

What is patient-centred care?

Purpose:

- ✧ Develop a substantive theory and model of the social processes of the experience of empowerment in the delivery of patient-centred cancer survivorship care

Research Questions:

Primary research question:

→ What are the social processes involved in the lived experience of empowerment in cancer survivorship care?

Secondary research questions:

→ How do these processes vary and relate to the patient and the healthcare provider and their unique circumstances?

→ How can these variations be used to inform the delivery of patient-centred care?

Method:

- ✧ Constructivist Grounded Theory
- ✧ Purposeful sampling and theoretical saturation
  - → Patients & Healthcare providers
- ✧ Sample size: ?
- ✧ Open ended interviews, observation, focus groups
  - → Member checking
- ✧ Constant comparative analysis

Contribution:

- ✧ A more in-depth understanding of empowerment grounded in the lived experiences of those who experience cancer as a chronic illness.
- ✧ Inform clinicians and patients how to develop an empowering experience to cancer survivorship care that integrates effective rehabilitative interventions, education, support and decision making, and skill development, all specific components of patient-centred care.

Leipert, B.D. & Reutter, L. (2005). Women's health in northern British Columbia: The role of geography and gender. Canadian Journal of Rural Medicine, 10(4), 241-253.
"…used a qualitative design to examine how women perceive and maintain their health within northern BC, Canada."

- ✧ 25 women interviewed (3 times)
  - → How do you maintain your health?
  - → How does the northern context influence your health?

Findings:

- ✧ The historical, physical, sociocultural and political contexts of the north influence northern women's health by contributing to their marginalization.
- ✧ The marginalization experienced by women in northern BC was characterized by:
  - → Isolation
  - → Limited options of good services and education
  - → Limited power
  - → Being silenced

Ethnography

- From anthropology
- The ethnographic method scientifically describes cultural groups
- To describe patterns of behaviour of people within a culture
- Aim is to combine the emic perspective (insider's view) and the etic perspective (outsider's view)
- In nursing research – often a focused ethnography (sub-unit of a cultural group)

A good fit when:

- Interested in cultural patterns
- Describing and interpreting a culture-sharing group
- "How does this cultural group express their pattern of…"

Researcher enters the world of study participants to observe, listen, ask questions.
Often involves extensive 'fieldwork' or immersion in the setting.

Ethnography: Example

Smallwood (2009) used a focused ethnography to study the roles of nurses in the culture established in a cardiac assessment team.

Data: interviews, observation & a field journal

Findings: Four main roles

1- Gatekeeper
2- Catalyst
3- Diplomat
4- Specialist consultancy practice.

Case Study

- From sociology
- The investigator explores a case (a bounded system) or multiple cases over time
- Case could be a group of people, a hospital, a community…
- Different approaches (qualitative vs including qualitative & quantitative data collection)
- Data – multiple sources including observations, interviews, documents
- Findings – a description and case-based themes

Case study: Example

Smith, D., Edwards, N., Varcoe, C., Martens, P.J. & Davies, B. (2006). Bringing safety and responsiveness into the forefront of care for pregnant and parenting Aboriginal people. Advances in Nursing Science, 29(2):E27-E44.

"To describe community-based stakeholders' perspectives on their experience improving care for pregnant and parenting Aboriginal women and families."

Cases – 2 health care organizations in one health region in BC
Data – Interviews, documents

Historical

- The systematic compilation of data and the critical presentation, evaluation, and interpretation of facts regarding people, events, and occurrences of the past
- Goal: to discover new knowledge about historical events
- Data: diaries, letters, notes, newspapers, minutes of meetings, medical or legal documents, physical or visual materials…

Descriptive Qualitative

- Design described as a 'qualitative study' or content analysis;
- Limited to description, little interpretation;
- Not a distinct method but a category of studies;

Descriptive Qualitative: Example

"A qualitative paradigm was chosen because its primary goal is description and discovery, rather than to test a hypothesis."

⇒ Purpose of study was to generate a comprehensive list of determinants of QOL (not interpretation)

Participatory Action Research

- Community-based approach to find solutions to problems in partnership with participants
- Identify actions to address problems
- Implement actions
- A means to facilitate change
- Cyclical process all done with participants who are the "experts" about the problem

Qualitative Research: Part 2

April 14, 2014 10:54 AM

Qualitative Research (Part 2): Specific steps of the research process

Qualitative research

- Design:
  - Phenomenology
  - Grounded Theory
  - Ethnography
  - Case Study
  - Historical Research
  - Qualitative descriptive
  - Participatory Action Research

Remember! The purpose of qualitative research is:
"…to ***discover meaning*** and to uncover multiple realities, not to generalize to a target population."

Sampling in Qualitative Research
Sampling is the process of selecting representative units of a population for study in a research investigation

A population in this context is a well-defined set that has certain specific properties or characteristics from which data can be gathered and analyzed:
– People
– Animals
– Objects
– Events

Guiding questions:

- Who would be an information-rich data source for my study?
- Whom should I talk to or observe to maximize my understanding of the phenomenon?

Sampling in qualitative research: Sampling strategies

1. Convenience sampling
2. Snowball sampling (network sampling)
3. Purposive sampling
4. Theoretical sampling

Sampling in qualitative research: Common features of the strategies

- Participants are not selected randomly
- Samples tend to be small & studied intensively

- Selection of participants is not wholly pre-specified, their selection is emergent
- Sample selection is not based on a desire for representativeness.

1. Convenience sampling
    - Selection of the most readily available persons as participants in the study
    - Select setting, invite volunteers, determine eligibility

Strengths
• Relatively easy to recruit participants
• Cost effective

Limitations
• May lack variation in sample
• Risk of bias is greater than in other types of samples

Example:
Nursing students' attitudes towards provision of sexual health care in clinical practice (Huang et al., 2012)

Background:
Sexual health care is an important component of holistic health care. Nurses' personal sexual knowledge and attitudes are shown to influence provision of sexual health care.

Aims and Objectives:
To investigate nursing students' attitudes towards providing sexual health care in clinical practice and to identify associated factors.

Design:
- This is a descriptive, cross-sectional study.
- Data were collected from 1 July 2002 to 31 August 2003 using the Nursing Attitudes in Sexual Health Care (NASHC) scale

Methods:
Participants
- Selected 146 senior nursing students by convenience sampling from nursing schools in two medical universities in central Taiwan.
- The participants were senior nursing students who had all completed the core course in the hospital, including lectures and practice in the fundamentals of nursing along with courses in medical-surgical, maternity, pediatric, psychiatric and community nursing.

Study Limitations:
"Our study has several limitations. Convenience sampling and collection of all data in one area of Taiwan limit the generalizations of our findings. Student nurses' attitudes must be interpreted with caution because students tend to present themselves as more open-minded if

they think they are expected to do so."

2. Snowball sampling

Researcher invites selected participants that are already known to him/her

- asks the initial participants to recommend friends/colleagues who meet the eligibility criteria
- also called network sampling

Strengths

- Effective method of finding people who are otherwise very difficult to find.
- May spend less time determining eligibility
- Easy to establish trust

Limitations

- Of referrals are dependent on the trust/effort of initial participants

Example:

If they do call you a nurse, it is always a "Male Nurse": Experiences of men in the nursing profession (Rajacich et al., 2013)

Background:

Men are underrepresented in nursing, accounting for less than 6% of Canadian nurses.

Purpose:

This research explores issues surrounding recruitment, retention, and work life satisfaction for men who are nurses working in acute care settings

Method:

Sampling

- Purposive and snowball sampling was used in this descriptive, qualitative study.
- Given the small number of potential candidates for participation, purposive and snowball sampling strategies were used to recruit male nurses.

Setting and Participants

- Sixteen men participated in the focus groups; groups were composed of two to six men.
- The participants ranged in age from 21 to 48 (M = 37.3 years) and had been in the nursing profession from 2 months to 21 years (M = 9.6 years).
- Eleven participants held full-time nursing positions, four worked part-time positions, and one participant was retired from nursing. Six participants held college nursing diplomas, eight held undergraduate degrees, and two held master's degrees.

Data Collection and Analysis:

- This study received clearance from the Research Ethics Board at the researchers' institution.

- Participation was voluntary, and written informed consent was obtained from all participants.
- One member of the research team led focus group discussions, with one or two other members of the team present as observers.
- Focus group interviews were semi- structured, and the interview questions centered on the following open-ended questions:
  → what attracted them to nursing;
  → ways in which work life does and does not meet their expectations;
  → unique challenges they face as a male nurse;
  → whether they have thought about leaving nursing;
  → how recruitment and retention of men could be supported and improved.
- Focus groups were audio taped and transcribed verbatim by a professional transcriber.
- Focus group transcripts were subjected to manifest and latent inductive content analysis to identify both common and unique features of the experience of men who work in the nursing profession

Findings:

- How Men Enter Nursing: The most commonly discussed way in which men entered the field of nursing was through family encouragement and/or having members of their families or friends who were in the health professions.
- The Ways in Which Nursing Does and Does Not Meet Expectations: Overall, the participants shared that their work life meets their expectations in some areas, but it falls short in others.

3. Purposive sampling

- The researchers' knowledge of the population is used to handpick participants to be included in the sample.
- Selection of participants/cases that will most benefit the study
- Researchers sometimes seek participants based on the concept of 'maximum variation' (selecting participants with variations in experience)
- Many studies evolve to purposive sampling (after initially using convenience or snowball)

Strengths

- Participants often capable of providing rich data

Limitations

- Can be difficult to find participants
- May be time consuming

4. Theoretical sampling

- Associated with grounded theory design
- Participants are recruited based on their ability to contribute to the developing theory
- Participants are not described/selected before the research begins but only as they are deemed necessary to advance development of the emerging theory.

Strength: Useful to confirm/disconfirm data

Limitation: Specific to grounded theory studies

Inclusion vs. Exclusion Criteria
Inclusion Criteria: Criteria that people must satisfy to participate in a study
Exclusion Criteria: Criteria used to exclude people from participating in a study

Data Collection in Qualitative Research

To a large extent, the success of a research study depends on the quality of the data collection methods chosen and implemented.

Types of data for qualitative research:

- Text
  - → 1:1 interviews
  - → Focus groups
  - → Researchers' observations
  - → Documents
  - → Diaries, personal journals
- Visual
  - → Photographs
  - → Art
  - → Video

Qualitative research: Working 'in the field'

- ◇ Gaining entrance
  - → Negotiating private space & time for interviews
  - → Recording data
  - → Role of the researcher
- ◇ Gaining trust of participants
- ◇ Data collection can be exhausting/emotional
- ◇ Emotional involvement with participants
  - → RN/researcher

Data collection methods/tools: Interview Guides
Note: Structured 'interviews' = questionnaire (quantitative)

Semi-structured interviews

- A specific topic or set of topics to be covered
- Researcher encourages participant to speak freely about specific topics
- Ordering of questions may be chronological, general to specific, less personal to more personal
- Probes ☞ used to elicit more detailed information

Example: Semi-structured (2/6 questions)

1. Tell me how you define health during pregnancy
   - What does it mean to be healthy during pregnancy?
   - Emphasis on mom, baby or both?
2. What messages you have received about what you should and should not be doing to stay healthy during pregnancy?
   - Feeling watched or judged?

Unstructured interviews

- When researcher does not have a clear idea of what it is they do not know
- A 'grand tour' question with very little interruption
- Allow, encourage story telling
- "What happened when you first learned you had AIDS?"
- Used in phenomenology, grounded theory, ethnography

Focus Group Guides

- Focus groups are usually limited to 5-8 participants
- Researcher
  - Facilitator/moderator ☞ to ensure equal participation
  - A second person to take notes / assist
- Semi-structured guide used
- Purpose is to take advantage of group dynamics for accessing rich information in an economical manner
- Usually homogeneous groups to promote comfort

Other qualitative data collection methods/tools:

- Joint interviews
- Critical incident technique
- Photo elicitation
- Others…

How much qualitative data should be collected?

- # interviews dependent on design
- Interviews & focus groups usually limited to 60 minutes

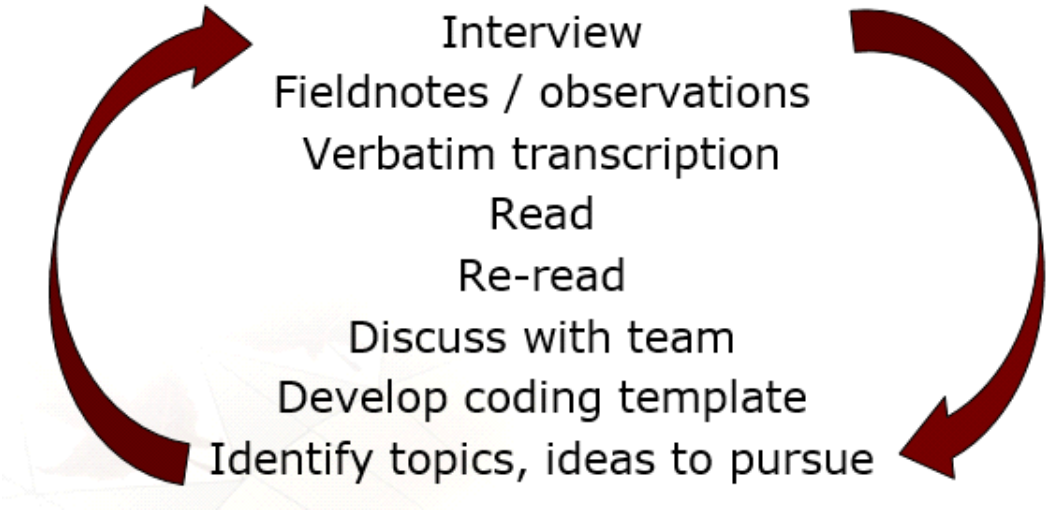
Saturation

– the point when no new data is being collected

– data collected is becoming redundant

▷ Data analysis in qualitative research:

Concurrent data collection & analysis



Presenting qualitative findings

- Results
  - Narrative with quotes as exemplars
- Discussion
  - Interpretation of the findings
  - Findings situated within the literature
  - Strengths and limitations
  - Implications for practice, education, research, policy
  - Conclusions

Presenting qualitative findings

- A major theme that emerged was the conflict around the child's right to refuse versus the right to be protected from preventable diseases.
- "I think as a nurse, the challenge is combining that gentle persuasion but with letting them make their own decision."
- "And we're taught in our profession you know, do no harm. So you feel like you're doing harm when you encounter situations where there's such strong resistance."
- Nurses wondered, "How much restraint is too much?"
- "I don't think the end always justifies the means. Because I had a father who came in with a son and he was really quite brutal with him. And we were really part of that because, you know, it was our end that we wanted to go to and that was the reason why. And I thought, I'm never doing that again. I'm just going to say, "I'm sorry, I can't do this. This is beyond what I can be part of."

Rigour in qualitative research

Rigour – the strictness with which a study is conducted to enhance the quality, believability, or **trustworthiness** of study findings

Lobiondo-Wood et al. (2013) p. 324	Davies & Logan (2012) p. 11-12	Lincoln & Guba (1994)
Credibility	Credibility	Credibility
Auditability	Dependability	Dependability

Fittingness	Transferability	Transferability
	Confirmability	Confirmability
		Authenticity

Credibility – the truth of the findings
Techniques:

- prolonged engagement,
- peer debriefing,
- checking with participants (member checking)
- *Triangulation* – the use of different information sources, investigators, or methods to verify or confirm findings.

Auditability/Dependability

- Is there sufficient information to lead the reader from the research question and raw data through the steps of analysis to the interpretation of the findings?
- Accountability
- Audit trail
- Would following the audit trail result in similar findings, under similar circumstances?

Fittingness/Transferability

- Is there enough information provided about the setting, participants so that readers can determine the importance for their own practice, research, theory development?
- Do the results 'ring true' to others?

Confirmability

- Do the findings reflect the participants' voices and the conditions of the inquiry (not the researcher's perspectives)
- 'objectivity'
- Researcher reflexivity is a strategy to strengthen confirmability

Authenticity

- When a report achieves authenticity, readers are better able to understand the lives being portrayed.
- Does it enable readers to develop a heightened sensitivity to the issues being depicted?

Critiquing Research

Evidence informed practice requires the integration of critical appraisal with clinical expertise and the patient's unique biopsychosocial circumstances

Stylistic Considerations

- Qualitative and Quantitative research differs is some very fundamental ways

Qualitative

- To discover and understand experiences
- Humanistic and interpretive

Quantitative
- To test hypothesis (DV:IV)
- Scientific and objective

In qualitative research, the most effective ways to communicate findings is to use quotations that reflect the phenomenon being studied
In quantitative research, the most effective way to communicate findings is through statistical analysis to extrapolate meaning

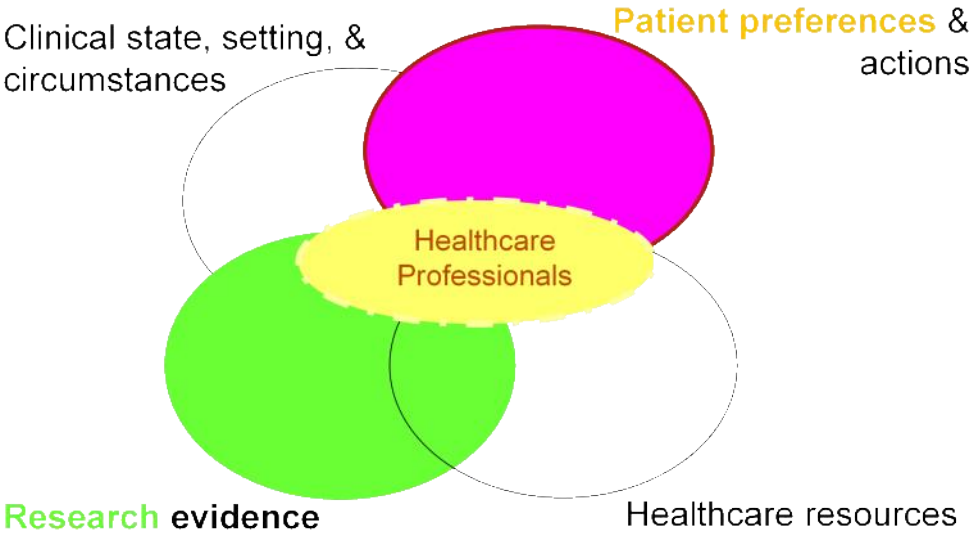
- Qualitative research will tend to have a more conversational tone to articulate concepts or phrases (themes)
- Quantitative research will tend to be more systematic

Research Rigour
- Qualitative Research: Trustworthiness
- Quantitative Research: Scientific Merit

Evidence-based Practice & Knowledge Translation

April 14, 2014 11:50 AM

Evidence-based clinical decisions



Some terms:

Term	Definition
Evidence-based practice	"Process of shared decision making between practitioner, patient and others significant to them based on research evidence, the patient's experience and preferences, clinical expertise or know-how, and other available robust sources of information." STTI, 2008
Evidence-informed decision making	"A continuous, interactive process involving the explicit, conscientious and judicious consideration of the best available evidence to provide care." CNA, 2008 "Evidence informed nursing is the ongoing process that incorporates evidence from research, clinical expertise, client preferences and other available resources to make nursing decisions about clients" CNA, 2010
Research utilization	"The use of findings from a study or set of studies in a practical application that is unrelated to the original research" Polit & Beck, 2012
Knowledge translation	"Knowledge translation (KT) is defined as a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically-sound application of knowledge to improve the health of Canadians, provide more effective health services and products, and strengthen the health care system." CIHR, 2010

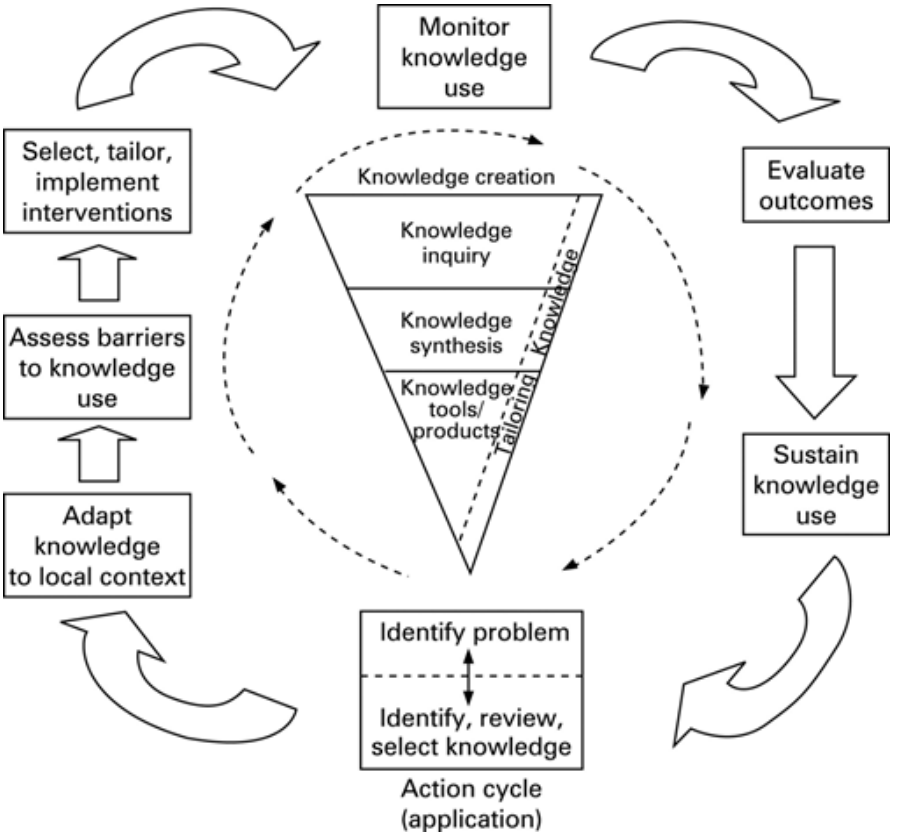
Knowledge Translation

- Why do we need theory for KT?
  1. to guide the development of knowledge translation interventions
  2. to help identify study outcomes, measures and variables
  3. to guide strategies for evaluation of KT interventions

4. guide conception of a qualitative study or as a basis for qualitative analysis

- KT implementation complex, may need more than one theoretical framework

KTA Framework



Knowledge creation

- Knowledge inquiry – individual studies
- Knowledge synthesis – systematic reviews, meta-analysis / meta-synthesis, many different types
- Products/tools – Best Practice Guidelines, Algorithms, Clinical Pathways, Patient Decision Aids

Identify problem

- Identify problem based on data, observations, where are the practice gaps (PICOT)
  - PICOT
    - Population
    - Intervention or issue
    - Comparison of interest (*optional*)
    - Outcome
    - Time (*optional*)
- Identify, review & select knowledge
- Assess quality
  - Crowe Critical Appraisal Tool – individual articles
  - Systematic reviews:
    - AMSTAR
      - Apriori study design
      - Duplicate study selection and data collection
      - Comprehensive lit search
      - Status of publication used as inclusion criteria (ie: grey literature)

        - Lists studies included/excluded
        - Characteristics of included studies
        - Scientific quality of studies assesses
        - Conclusions based on scientific quality of studies
        - Appropriate methods to combine findings
        - Publication bias assessed
        - Statement of conflict of interest
    - Critical appraisal skills programme
    - PRISMA – Preferred reporting for systematic reviews and meta-analyses
- For clinical guidelines – AGREE tool

Adapt knowledge to local context

- Is knowledge valuable, useful and appropriate for a given setting and circumstance?
- Knowledge may need to be tailored to local contexts…may be issues with the knowledge itself, the potential adopters, or the setting.

Assess barriers/supports to knowledge use

- Methods to assess barriers
    - Quantitative (surveys)
    - Qualitative (Interviews, focus groups, range of informants)
    - Monitoring of barriers long-term
    - Think individual & organizational

Select, tailor & implement interventions

- Multiple interventions often needed to address multiple barriers
- Examples of interventions:
    - Educational strategies
    - Audit and feedback
    - Informatics interventions
    - Knowledge brokers
    - Patient-focused strategies
    - Integrate knowledge tools in to care processes

Monitor knowledge use - evaluate outcomes

- Essential to define what is knowledge use
- Conceptual knowledge use – changes in levels of knowledge, understanding or attitudes
- Instrumental knowledge use – changes in behaviour or practice
- Strategic knowledge use – manipulate knowledge to attain power or profit goals
- Evaluation focuses on whether the knowledge makes a difference in terms of health, practitioner and system outcomes.

Sustain knowledge use

- "The degree to which an innovation continues to be used after initial efforts to secure adoption is completed."
- Back in to loop with focus on sustainability
- Should be considered in all phases of the KT implementation
- Many factors affect sustainability – financial, political, leadership, relevance

The EBP debate

Arguments against EBP:

- Does not take in to consideration relational nature of nursing practice
- Has traditionally focused on narrow definition of knowledge
- Changes 'forced' on clinicians without their input or against their wishes
- Pandering to biomedical discourse and domination – "Best practice" implies hierarchical and exclusivist approach
- Impede critical thinking on the part of nurses, seek to govern and regulate nursing work

KT tools – Clinical practice guidelines

- Systematically developed statements aimed to assist clinicians and patients in making decision about appropriate health care for specific clinical circumstances
  - Systematic vs. arbitrary
  - Assist and not supplant decision making
  - Not formulaic protocols

CPGs – systematic development

- Establish multidisciplinary team
- Identify question
- Systematic review of evidence
- Appraise and interpret evidence
- Draft recommendations
- External review of draft
- External review of draft
- Revise recommendation
- Dissemination
- Implementation

CPGs – do they work?

- Systematic review by Grimshaw et al*
  - 10% improvement in processes and outcomes of care

** J Gen Intern Med 2006 Feb;21 Suppl 2:S14-20*
** Health Technol Assess 2004 Feb;8(6):iii-iv, 1-72*

CPGs – determining quality
AGREE II

- 6 quality domains (23 items)
  - Scope & purpose
  - Stakeholder involvement
  - Rigour of development
  - Clarity of presentation
  - Applicability
  - Editorial independence

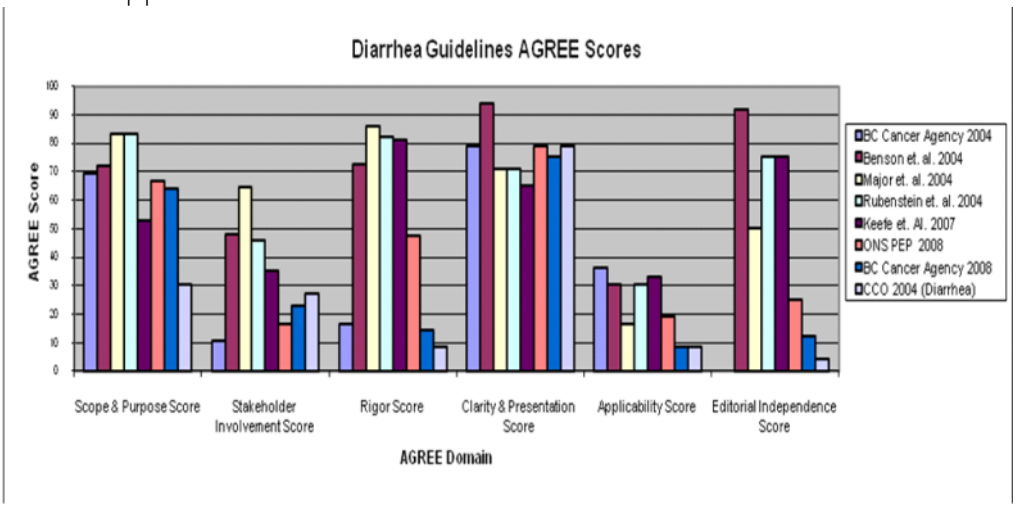
- Systematic search
- Criteria for selection
- Strengths/limitations
- Methods for making recommendations
- Health benefits/risks considered
- Link b/w evidence and recommendations
- External peer review
- Procedure for update

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

1. Scope & purpose (3)
2. Stakeholder involvement (3)
3. Rigour of development (8)
4. Clarity & presentation (3)
5. Applicability (4)
6. Editorial interdependence (2)

- 23 items
- 7-point Likert Scale

AGREE Appraisal – Results on Cancer treatment induced diarrhea Guidelines



Finding CPGs

1) Specialty Nursing Organizations

2) Journals
3) Cancer Care Ontario
4) Clinical agencies (ie: BC Cancer Agency)
5) Fraser Health Authority
6) National Comprehensive Cancer Network
7) Registered Nurses Association of Ontario-Best Practice Guidelines
8) Johanna Briggs Institute
9) Others…

Table 5. AGREE Scores

AGREE Scores	Fraser Health (1)	Capital Health (2)	NCCN (3)	RNAO (31)
Scope & Purpose	77.78 %	55.56 %	85.19 %	77.78 %
Stakeholder Involvement	43.06 %	40.00 %	41.67 %	54.17 %
Rigour of Development	68.25 %	23.81 %	38.10 %	86.90 %
Clarity & Presentation	75.00 %	65.00 %	77.78 %	87.50 %
Acceptability	27.78 %	8.89 %	22.22 %	52.78 %
Editorial Independence	25.00 %	10.00 %	77.78 %	62.5 %
Overall Quality Assessment	Recommend with provisos. Good generally, well written. Literature search could have been more comprehensive.	Recommend with provisos.	Recommend with provisos. Drugs described are not used in Ontario; good to see antipsychotics were used as they are often more effective; did not specify when meds should be used.	Rejected. Not for this group's perspective; needs more pharmacological recommendations to treat delirium.

	Used AGREE to develop	Available Online (PDF)	App for Mobile Device	Resources
RNAO	Yes	Yes	Yes	-Online learning modules -Free videos -Self-learning packages -Toolkit
Cancer Care Ontario	Yes	Yes	Yes	-Algorithm -Pocket guide
Fraser Health	Yes	Yes	No	

EBP and you!

- How can you integrate evidence or inform your practice with evidence?
  → Do your own PICO
  → Look at the evidence (where)
  → Critique the evidence
  → Look at your own barriers and facilitators
  → How will your practice change?
  → How will you know your practice has changed?

Quantitative Research: Part 2

April 14, 2014 01:51 PM

Quantitative Research (Part 2): Specific steps of the research process

Sampling in Quantitative Research

- The process of selecting a portion or sub-set of the designated population to represent the entire population
- The purpose of sampling is to increase the efficiency of a study
- When done properly, researchers can draw inferences and make generalizations about the population
- A representative sample has similar key characteristics as the population
- Sampling bias
  → Sampling strategies are used to minimize bias
- Two broad types of sampling strategies
  1. Nonprobability sampling
  2. Probability sampling

Nonprobability sampling

- Subjects are selected by non-random methods
- Findings are less generalizable (external validity)
- More feasible
- Sample can become more representative by using inclusion and exclusion criteria
- Major types:
  - Convenience
  - Quota
  - Matching
  - Network/snowball
  - Purposive

Convenience sampling

- What is a potential source of bias when using a convenience sample?

Quota sampling

- Some representativeness of the population is built in to the sample (strata)

# and % of students in strata of a quota sample of 5000 graduates of nursing programs in city X			
	Diploma grads	Associate degree grads	BScN degree grads
Population	1000 (20%)	2000 (40%)	2000 (40%)
Strata	100	200	200

- Risk of bias is greater than in any other strategy
- Since there is voluntary participation, the probability of researchers recruiting people with a specific interest in the topic, or who feel strongly about it are more likely to participate…may favour certain outcomes.
- Self-selection bias is the term

To check for the representativeness of the convenience sample and the extent to which bias is or is not evident, the researcher can compare the convenience sample data with the known demographics and of the population.

Matching sampling

A sampling strategy used to construct similar groups for comparison based on pre-established variables

Example from: Peterson & DiCenso (2002)		Adults	Adolescents	Matched sample
Parity	Primipara	72	72	80 matched pairs
	Multipara	8	8	
Infant health	Rooming-in	76	76	
	NICU	4	4	
Infant feeding	Breastfeeding	62	62	
	Formula feeding	18	18	
Mode	Vaginal	69	69	
	Cesarean	11	11	

Probability sampling

- Subjects are randomly selected from the population
- Each subject has equal & independent chance of being selected
- Four common strategies
  - Simple random sampling
  - Stratified random sampling
  - Cluster sampling
  - Systematic sampling

Sample size in quantitative research

- Must be determined prior to study start
- The larger the sample, the more likely it is to be representative
- Smaller samples produce less accurate results
- 'Power analysis' used to calculate sample size

Factors influencing sample size in quantitative research

- Type of design used
- Type of sampling procedure used
- Type of formula used for estimating optimum sample size
- Degree of precision required
- Heterogeneity of the attributes under investigation
- Relative frequency that the phenomenon of interest occurs in the population (i.e. common versus rare health problem)
- Projected cost of using a particular sampling strategy

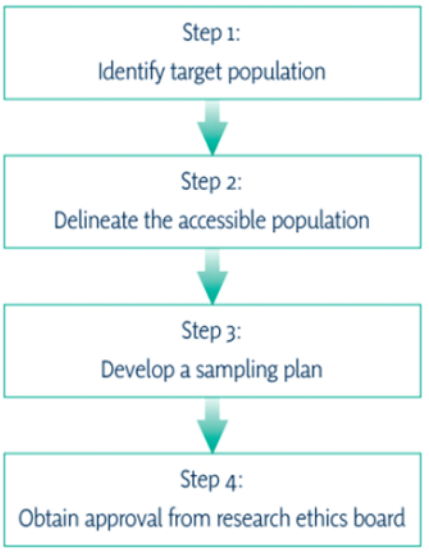


FIGURE 12-3 Summary of the general sampling procedures.

Critiquing Criteria: Sampling

- ☐ Are sample characteristics described?
- ☐ Can population be inferred from sample?
- ☐ Are eligibility criteria clearly described?
- ☐ Are exclusion criteria clearly described?
- ☐ Could you replicate the sampling?
- ☐ Is the sampling method appropriate?
- ☐ What bias is introduced with this method?
- ☐ Is the sample size suitable?

Data collection in quantitative research

- Is objective
- Is systematic
- Concepts (variables) to be measured must be operationalized
- Consistency/Intervention fidelity
- Inter-rater reliability

Types of data collection methods

1. Physiological measurements
2. Observational methods
3. Interviews
4. Questionnaires
5. Records or available data

Example of the observational method: Objective and systematic observation Kryworuchko, J. (2011)

Explores family's concerns (fears) about management[3]	- (1)	- (1)	✓ (4)
Checks understanding[3]	- (1)	- (1)	✓ (4)
Evaluate progress in decision-making[2]			
Feeling informed	-	✓	✓
Uncertainty	✓	-	✓
Clear values	-	-	✓
Support needs	-	-	✓
Quality of decision	-	-	✓
Next steps	✓	✓	✓
Time to revisit decision	✓	-	✓
Opportunities to ask questions[3]	✓(2)	✓(2)	✓(4)
Elicits the family's preferred level of involvement[3]	✓(4)	- (0)	- (0)

Interviews and questionnaires

- Interviews / Interviewer-administered
  - Data is collected verbally
  - Open or closed-ended questions
  - In person or by telephone
- Self-administered questionnaires
- Items and/or scales (scale scores)

Closed-ended questions

- A fixed number of alternative responses
- Examples:
  - Likert scale
  - Dichotomous responses
  - Categories

Likert Scale:

On a scale from 1 to 10 where 1 is beginner and 10 is expert:

How would you describe your skill at caring for adolescent mothers?

1 2 3 4 5 6 7 8 9 10

Beginner Expert

Dichotomous

How would you describe your employment?

- ❑Full Time
- ❑Part Time

Categories

What is your highest level of education?

- ❑Diploma
- ❑Baccalaureate degree
- ❑Masters degree
- ❑Doctorate degree
- ❑Other: specify

_____

Online questionnaire:

Records or available data:

Examples:

– Client charts

– Statistics Canada

– College of Nurses of Ontario

– Canadian Institute for Health Information (CIHI)

Critiquing criteria: Quantitative data collection

1. Are all of the data collection instruments clearly identified and described?
2. Is the rationale for their selection given?
3. Are the data collection procedures similar for all participants?

Quantitative data analysis

1. Descriptive statistics
2. Inferential statistics

1- Descriptive Statistics

- Define
- State the purpose
- Levels of measurement
- Frequency distribution
- Central tendency
- Variability

What are descriptive statistics?

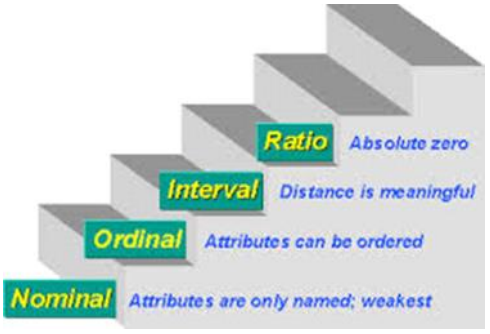
Statistical techniques used to describe and summarize the data from the sample.
"…statistical techniques that reduce data to manageable proportions by summarizing and organizing them."

Purpose

"…to arrange data visually to give meaning and to help in understanding the sample characteristics and variables before conducting inferential data analysis"

Levels of Measurement

"Measurement is the assignment of numbers to variables or events according to rules."
"The measurement level is determined by the nature of the object of event being measured."



Levels of measurement are:

a) Nominal
b) Ordinal
c) Interval
d) Ratio

Nominal Measurement

- Classify objects or events into categories
- The numbers assigned are labels (do not represent more or less of a characteristic)
- Mutually exclusive
- Dichotomous or categorical

- Examples:
  - Gender
  - Marital status
  - Religious affiliation

Ordinal Measurement

- Shows relative ranking of objects; numbers assigned to each category can be compared and a member of a higher category is said to have more of an attribute than one in a lower category
- Intervals are not necessarily equal
- Zero is not absolute
- Examples:
  - Class ranking
  - Likert scale responses

Interval Measurement

- Shows rankings of events or objects on a scale with equal intervals between the numbers
- Zero point is arbitrary (ex. 0°C does not mean the absence of temperature)
- Examples:
  - Temperature scales
  - Pain scale
  - Beck Depression Inventory

Ratio Measurement

- Shows rankings of events or objects on scales with equal intervals and absolute zeros
- Highest level of measurement—usually only achieved in physical sciences
- Examples:
  - Height
  - Weight
  - Blood pressure

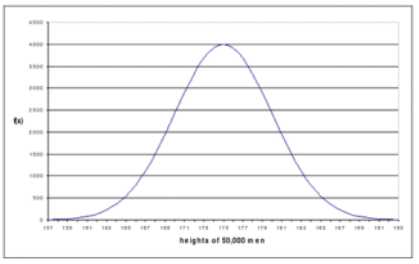
Descriptive statistics

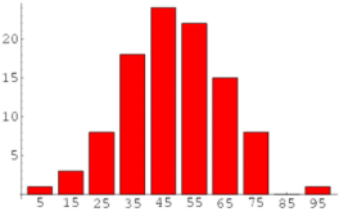
Sets of data can be described in 3 ways:

1- Shape of the distribution of values
2- Central tendency
3- Variability

Frequency distribution

- Common basic way to organize data
- The number of times each event occurs is counted, or the data are grouped and the frequency of each group is reported
- Summarizes the occurrences of events under study; tallies the frequency of events
- Examples:

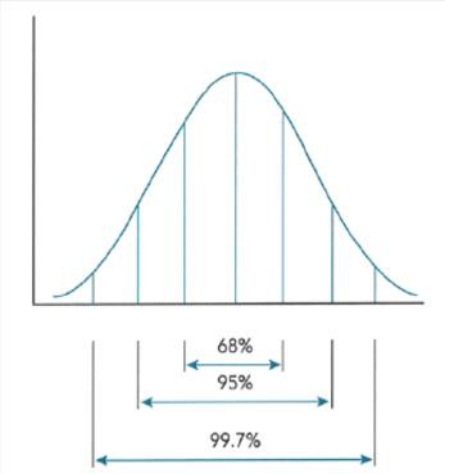




Measures of central tendency

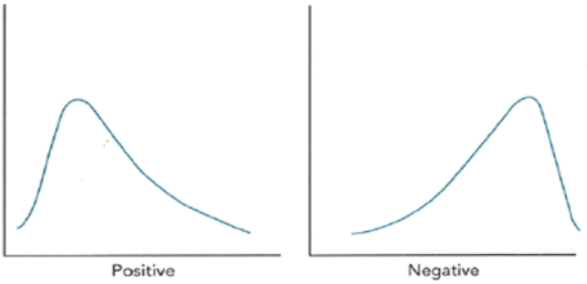
- Describe/summarize the middle of the group
- Each measure has specific uses
- The types of distribution indicates which of the 3 measures of central tendency should be used
  a) Mode: most frequent score
  b) Median: middle score
  c) Mean: average score

Normal Distribution



A theoretical concept that observes that interval or ratio data group themselves about a midpoint in a distribution closely approximating the normal curve

Skewness



- Not all data follow a normal curve
- Positive skew 'pulls' the mean to the left
  - Ex: world income
- Negative skew 'pulls' the mean to the right
  - Ex: age at death

Variability or dispersion

- The 'spread' of the data

- Enables you to evaluate homogeneity or heterogeneity
  a) Range
  b) Percentile
  c) Standard deviation

Range
- Difference between the highest and lowest scores (so a change in either of these changes the range)
- Simplest but most unstable measure of variability
- Always reported with other measures of variability
- Range affects the standard deviation

Percentile
- The percentage of cases a given score exceeds
  - Median is the 50th percentile
  - A score in the 90th percentile is exceeded by only 10% of scores

Standard Deviation (SD)
- A measure of average deviation of the scores from the mean and therefore, should always be reported with the mean.
- Most frequently used measure of variability
- Based on the concept of the normal curve (normal distribution)
- SD is used in the calculation of many inferential statistics

2- Inferential Statistics

- Purpose
- Statistical significance
- Clinical significance
- Confidence intervals
- Examples
  – Tests of difference
  – Tests of relationship
- Regression analyses
- Odds ratio

Purpose

Are used to…depict inference, relationships and probabilities; Inferential statistics provide evidence that allow the researcher to make statements about the larger population from studying the sample.

Statistical significance

"… means that the statistical calculation shows a relationship between the variables that is unlikely to be due to chance only.

…means that the difference (or relationship) observed between groups in the sample is most likely a real difference (ex: caused by the intervention) and not due to chance.

- Is reported as a 'p value'
- p = probability
- To be statistically significant the p < 0.05

  which means there is a probability (p) of 5% (0.05) or less that the results found by the researcher are due to chance alone.

Clinical vs. statistical significance

- A statistically significant hypothesis = finding unlikely to have occurred by chance
- Clinical significance = magnitude of significance is important to clinical care
  - Will it make a difference in the way we care for patients?
  - How important is the difference found?

Confidence Interval (CI)

- An estimated range of values within which the true value is expected to be found
- Most commonly reported is a 95% degree of certainty, meaning 95% of the time, the findings will fall within the range of values given as the CI
- Ex: Mean difference of a shorter length of stay is 0.73 days (95% CI 1.52-0.07).

Examples of inferential statistics

- Tests of difference
- Tests of relationship
- Regression analysis
- Multiple regression
- Odds ratio

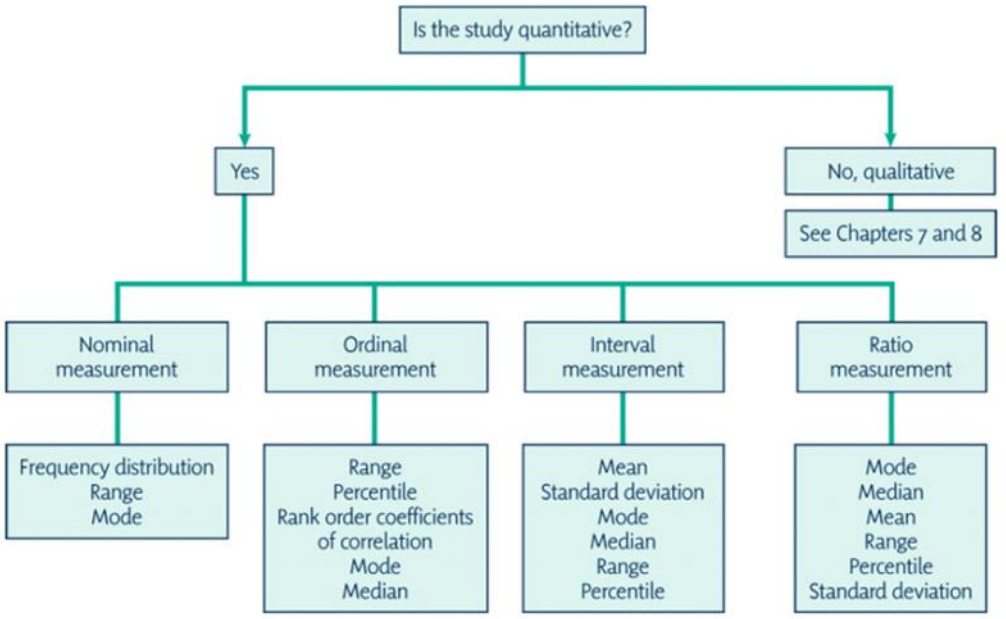
Tests of Relationship

- Exploring the relationship between two or more variables reflecting interval data
- Determining the correlation, the degree of association (ranges from –1.0 to +1.0)
- Most common (three names for same test)
  - Pearson product moment correlation coefficient
  - Pearson r
  - Pearson correlation coefficient
- Correlation coefficients range from: –1.0 to +1.0
  Negative correlation r = –.38
  Positive correlation r = .65
  Perfect correlation
  r = +1.0 (positive) or –1.0 (negative)

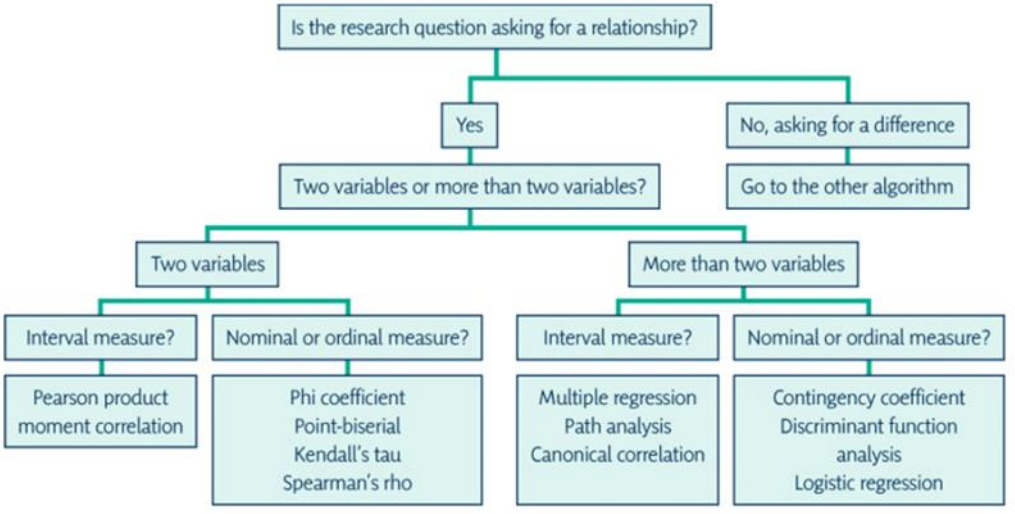
Are the following tests of difference or relationship?

- Is there a relationship between self-esteem and body weight among postmenopausal women?
- Is there a difference in the number of adverse events among clients discharged 2 days after an abdominal hysterectomy compared with clients discharged 4 days after an abdominal

hysterectomy?



UNN FIGURE 16-1 CRITICAL THINKING DECISION PATH. Descriptive Statistics.



UNN FIGURE 16-3 CRITICAL THINKING DECISION PATH. Inferential Statistics—Relationship Questions.

Critiquing Descriptive Statistics**

- Were appropriate descriptive statistics used?
- What level of measurement is used?
- Is the sample size large enough?
- What descriptive statistics are reported?
- Were these appropriate to the level of measurement used?
- Are appropriate summary statistics provided for each major variable?
- Does the hypothesis reflect if differences or relationships are being tested?

- ❖ Is the level of significance indicated?
- ❖ Does the measurement level permit parametric testing?
- ❖ Is the sample size large enough for parametric testing?
- ❖ Are hypothesis results clearly presented?
- ❖ Do tables and graphs enhance text?
- ❖ Are the results understandable?
- ❖ Are practical and statistical significance distinguishable?

Rigour in Quantitative Research

- ✧ Ideally, research results are generalizable
- ✧ Rigour is necessary for this to occur
- ✧ Rigour = the quality of the study. Steps taken to avoid bias & increase confidence in findings
- ✧ Quantitative rigour— internal and external validity

[Remember qualitative rigour—shown by credibility, dependability (auditability), confirmability and fittingness (transferability)]

Internal validity

Definition: The extent to which the study design and methods produce valid, accurate results, and uncontrolled or extraneous factors are not responsible for the outcomes

What <u>factors within the study</u> other than the treatment (intervention) might have influenced (biased) the outcomes?

Are the data collection instruments valid & reliable?

<u>Internal validity of a quantitative study</u>

Validity of instruments for data collection

- □ Content validity
- □ Construct validity

Reliability of instruments used in data collection

- □ Inter-rater reliability
- □ Test-retest reliability
- □ Internal consistency
- □ Rigour in quantitative research (cont'd)

<u>External validity</u>

Definition: The extent to which the study findings can be generalized or applied to other settings.

- What factors that occurred during the study that might make it difficult to apply the findings to other settings?

Findings:

"The multiple sections of a research article that include the results, conclusions, interpretations, recommendations, generalizations, and implications for future research and nursing practice…"

Two sections:

- Results
- Discussion

Results:

- ✧ Data-bound section
- ✧ Both descriptive and inferential statistical results of testing are reported
- ✧ Set the stage for "Discussion" section
- ✧ Exact tests, specific test value, and probability level achieved are reported
- ✧ All data presented whether supported or not supported
- ✧ Investigator objectively presents results
- ✧ Data are summarized
- ✧ Summation of data is accomplished in text, tables, and figures of the article

Discussion:

- ○ Interpretation of results with a careful reflection on all aspects of study
- ○ Researcher makes data come alive
- ○ Researcher interprets and gives meaning to numbers in quantitative study
- ○ Researcher reviews data in light of the theoretical framework and literature review
- ○ Discussion of how data may suggest additional or previously unrealized relationships
- ○ Strengths and limitations of study discussed
- ○ Generalizability or inferences from the data are discussed
- ○ Recommendations for practice and future research are suggested

Critiquing Criteria

- ⇒ Are the results of each hypothesis included?
- ⇒ Are the results concise and sequentially presented?
- ⇒ Are the tests used for analysis presented?
- ⇒ Are the results objectively presented?
- ⇒ Do the tables and figures enhance the text?
- ⇒ Are the results interpreted in the context of the hypotheses, framework, and process?
- ⇒ If data are supported, is there a discussion of how the theoretical framework is supported?
- ⇒ If data are not supported, is there a discussion of the study's weaknesses and strengths?
- ⇒ Is the study's clinical relevance discussed?
- ⇒ Are generalizations within the scope of the findings?
- ⇒ Are recommendations made?
- ⇒ What is the study's strength of evidence?