MODULE 1

Introduction to Research

Sources of Knowledge

- **EPISTEMOLOGY** : " Theory of Knowledge"
- Five ways we can know something **:**
  - Personal experience
  - Tradition
  - Experts and authorities
  - Logic / Reasoning
  - The scientific method

1. Personal Experience

- Relying on one's knowledge of prior experiences
- **Empiricism** is the idea that all knowledge comes from observation or sensory experience
  - Also referred to as **Positivism**
- **John Locke** – *tabula rasa (blank slate)* being filled with knowledge by experience/observation
- **Limitations**
  - How one is affected by an event depends on who one is
  - One frequently needs to know something that cannot be learned through experience

	POSITIVISM	CONTRUCTIVISM
Definition of knowledge	Gained through observable and measurable facts	Reality is socially constructed
Objectivity and Subjectivity	Objective	Subjective as individuals create their perception.
Natural & Social Science	Suitable for natural sciences	Suitable for social sciences.

2. Tradition

- Doing things as they have always been done
- Limitations
  - Traditions are often based on an idealized past
  - Traditions can be distant from current realities and the complexities associated with them

3. Experts and Authorities

- Relying on the expertise or authority of others
- Limitations
  - Experts can be wrong
  - Experts can disagree among themselves, as in a "second opinion"

4. Reasoning

- **Rationalism** is the philosophical idea that reason is the primary source of knowledge.

5. Scientific Method

- The goal of the scientific method is to explain, predict, and/or control phenomena.
- This involves the acquisition of knowledge and the development and testing of theory.
- The use of the scientific method is more efficient and reliable than any other source of knowledge.
- **Five Steps in the Scientific Method**
  - Recognition and definition of the problem
  - Formulation of hypotheses
  - Collection of data
  - Analysis of data
  - Stating conclusions

Inquiry vs Research

Nature of Inquiry

- **Inquiry** is a learning process that motivates you to obtain knowledge or information about people, things, places, or events.
- Synonymous with investigation
- A problem solving technique, makes you ask open-ended questions
- E.g. You want to know in which section does your crush belong.
- More complex act of investigation than inquiry
- Follows a scientific procedure in discovering truths or meanings about things in this world.(Goodwin, 2014)

What is RESEARCH ?

- It is a ***systematic*** and intensive process of carrying on a ***scientific method*** of analysis, carried out for the ***discovery*** and development of an ***organized body of knowledge*** .
- The word was derived from the old French word ***cerchier***, meaning to ***"seek or search".***
- The prefix re means ***"again"*** and signifies replication of the search.
- One seeks new knowledge or to directly ***utilize knowledge specific to life situations.***

Nursing Research

- **Polit and Beck (2004)** - systematic inquiry designed to develop knowledge about issues of importance to the nursing profession, including nursing practice, education, administration and informatics.
- **Burns and Grove (2005)** - defined nursing research as a "scientific process that validates and refines existing knowledge and generates new knowledge that directly and indirectly influences clinical nursing practice.
- **Vreeland (1973)**, stated that "Nursing research is concerned with the systematic study and assessment of nursing problems or phenomena; ***finding ways to improve nursing practice and patient care*** through creative studies; initiating and evaluating change; and taking action to ***make new knowledge useful in nursing."***

– **Treece and Treece (1973)**, stated: "Nursing research includes the breadth and depth of the discipline of nursing and the ***rehabilitative, therapeutic, and preventive aspects of nursing*** as well as the preparation of practitioners and personnel involved in the total nursing sphere."

Why get excited about research ?

– "The essence of all research originates in curiosity - a desire to find out how and why things happen".
– **I wonder**…
  - How can…?
  - Why do…?
  - What is the best way to…?
  - What causes…?
  - What are the effects of…?

Nursing Research

Clinical Research

– Research designed to generate knowledge to guide nursing practice and improve the health and quality of life of clients.
– A knowledge base is necessary for the recognition of nursing as a science by health professionals, consumers, and society. (Burns & Grove, 2001; Melnyk & Fineout-Overholt, 2005.

Features of Research

– **Reliability/Generalizations** - findings can be applied to situation or population larger than the one studied
– **Order**
– **Control**- minimize bias and maximize the precision and validity of data gathered.
– **Empiricism**-objective methods of seeking information
– **Systematic**- systematic fashion from identifying a problem to conclusions and recommendations

Purpose of Research

– **RA 9173 Section 28** (e)states that: It shall be the duty of the nurse to: (e) Undertake nursing and health human resource development training and research which shall include, but not limited to the ***development of advance nursing practice***.
– Limitations

Nurse's Role in Research (ANA-1989)

- **BSN Degree**

– 1. Critiquing & synthesizing research findings from nursing profession and other discipline for use in practice.
– 2. Provide valuable assistance in identifying research problems and collecting data for studies.

- **Master's Degree**

– To lead health care teams
  - Making essential changes in nursing practice
  - Health care system based on research

– Conduct investigations
– Initial studies in collaboration with other investigators
– Facilitate research and provide consultation

- **Doctoral Degree**

– Assume a major role in the conduct of research.
– Generation of nursing knowledge in a selected area of interest.
  - Extend scientific basis
  - Develop methods to measure nursing phenomena

- **Post Doctoral Degree**

– Assumed a full researcher role and has a funded program of research
– Develop and coordinate funded research programs

Research and the Nursing Process

– The **NURSING PROCESS** is an orderly and ***systematic manner*** of determining the client's problems, making plans to solve them, initiating plans or assigning others to implement them, and evaluating the effectiveness of those plans.

NURSING RESEARCH	NURSING PROCESS
1.Problem Identification ➢ Conceptualized topic ➢ Curiosity about the topic ➢ Brainstorm with peers ➢ Review related literature ➢ Develop conceptual framework. ➢ State specific problem	**1.Assessment Phase** ➢ Collect data from various sources using appropriate techniques.
2.Methodological Development ➢ Identify variables ➢ Formulate hypothesis ➢ Develop sampling size ➢ Develops instrument needed and validate. ➢ Balance validity with reliability.	**2.Diagnostic Phase** ➢ Validate / organized data ➢ Analyze and interpret actual and potential health problems. ➢ Formulate nursing diagnosis.
3.Data Management ➢ Collect and organize data ➢ Analyze data ➢ Interpret results of study	3.Planning Phase ➢ Prioritize health problems ➢ Identify components of care / resources needed. ➢ Set goals, formulate plan of care ➢ Select nursing actions ➢ Select evaluation parameters ➢ Update/modify as needed.
4.Disseminate Findings ➢ Publish findings ➢ Review findings ➢ Critique findings	4.Implementation Phase ➢ Implement plan of care ➢ Collaborate w/ other members ➢ Modify plan as needed.

Research in the Philippines

– In the Philippines, nursing research prior to and during the 60s was mostly on nursing administration (51%), and nursing education (31%), while patient care and related studies received minimal attention w/ only 13%, while patient care and related studies received minimal attention, with only 13% and 3% respectively.
– Teaching of research was integrated in the nursing curriculum in the mid-sixties.
– An analysis of nursing done from 1935 to 1980 shows that of the 305 studies, 123 or 40% were nursing service administration, 112 or 37% were on nursing education, 47 or

15.5 were on patient care, and 23 or 7.5% were related studies (Williams, 1988)
- In the Philippines today, nursing educators agreed that skill in research should be one of the core competencies of Bachelor in Science in Nursing.

Future Directions for Research (Polit & Beck, 2014)
- Heightened focus on evidence-based practice.
- Development of stronger evidence-base through rigorous methods and multiple confirmatory strategies.
- Greater emphasis on systematic integration of reviews.
- Expanded local research in healthcare settings.
- Strengthening of multidisciplinary collaboration among nurse researchers.
- Expanded dissemination of research findings.
- Increasing the visibility of nursing researchers.
- Increased focus on cultural issues and health disparities.

Research Priorities (Sigma Theta Tau, 2005)
- Health Promotion and Disease Prevention
- Promotion of Health Vulnerable and Marginalized Communities.
- Patient Safety and Quality of Healthcare
- Promotion of Health and Well-being of Older people
- Patient - Centered Care and Care Coordination
- Palliative and End of Life Care
- Care Implications of genetic testing and therapeutics
- Capacity development of nurse researchers
- Working environment for nurses
- Development of EBP and translational research
    - **Translational research** : means translate into practice

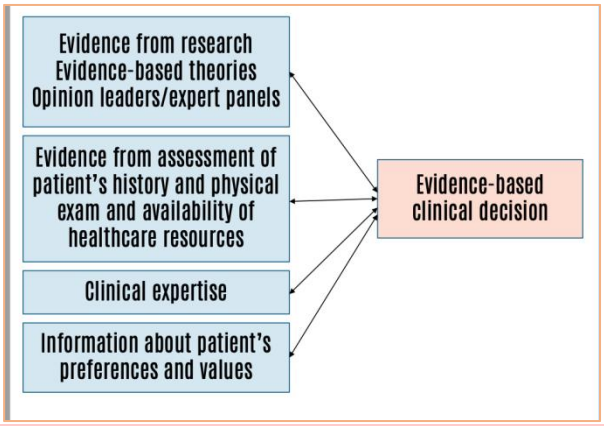
Evidence - Based Practice
- The ultimate goal of nursing is to provide evidence-based practice care that provides quality outcomes for patients and their families, healthcare providers and the health care system (Craig & Dmith, 2007; Pearson et. Al., 2007)

- the conscientious use of current best evidence practice of making clinical decisions about patient care (Sacheet et. Al., 2000)

- evolves from the integration of the best research evidence with clinical expertise and patient needs and values (Institute of Medicine, 2001; Sachett, et. Al., 2000)

Why EBP?
- Better outcomes
- Explosion of research / literature
    - One study stated it could take as long as 17 years to put research findings into practice
- Practice becomes outdated to patients detriment
    - Placing babies on their back instead of belly
    - Beta blockers following MI

Components of EBP



Models for EBP
- The **Stetler Model** of Research utilization to promote evidence-based practice.
- Five Sequential Phases of Settler Model
    - Phase I : Preparation
    - Phase II : Validation
    - Phase III : comparative Evaluation and Decision Making
    - Phase IV : Translation/Application
    - Phase V : Evaluation
- The **Iowa Model** of Evidence Based Practice to promote quality of care.
- Steps inn Individual EBP :
    - Framing an answerable clinical questions
    - Searching for relevant research based evidence
    - Appraising and synthesizing the evidence
    - Integrating evidence w/ other factors
    - Assessing effectiveness

Appraisal of Evidence
- Validity of study findings
- Clinical importance of findings
- Precision of estimates effects
- Associated cost and risk
- Utility in a particular clinical situation.

Research Foundation
- **Level 1**
    - Systemic review of RCTs (Randomized Clinical Trials)
    - Systemic review of nonrandomized trials
- **Level 2**
    - A single RCT
    - Single nonrandomized trials
- **Level 3**
    - Systematic review of correlational/observational studies
- **Level 4**
    - Single correlational / observational study
- **Level 5**
    - Systemic review of descriptive/qualitative/physiologic studies
- **Level 6**
    - Single descriptive / qualitative/physiologic study

- **Level 7**
  - Opinions of authorities, except committees.

5 STEPS COMPRISING EBP

- Identify a problem from practice and turn it into a specific question.
- Find the best available evidence that relates to the specific question.
- Critically appraise the evidence for its validity, usefulness and methodological rigor.
- Identify and use the current best evidence and together with the patient or clients preferences and the practitioners expertise and experience apply it to the situation.
- Evaluate the effect on the patient or client, and reflect on the nurse's own preferences.

QUALITIES OF GOOD NURSE RESEARCHERS

- Honest and credible
- Accurate in his/ her data
- Organized and systemic
- Logical
- Self – awareness
- Imagination and curious
- Persistent with barriers
- Good relationship with other researcher and with his/ her respondents.
- Update present ideas and events

CHARACTERISTIC OF RESEARCH

- Accuracy
- Objectiveness
- Timeliness
- Relevance
- Clarity
- Systematic

MODULE 2

Types of Variables and Researches

What are Variables ?

- ***VARIABLES*** are qualities, properties, or characteristics of people, things, events or situations under study that vary from one person to another.
- -are factors that affect research outcome**. "Variable" = "more than one value"**
  - Age, gender, height, weight, ethnicity, etc.
  - Anything that can vary can be considered a variable.
  - For instance, *age* can be considered a variable because age can take different values for different people or for the same person at different times.

Two Basic Types of Variables

- **QUANTITATIVE VARIABLES**
  - Characteristics, attributes, or traits that can be measured.
  - **"Measurable"** variables
  - E.g. Age, height, weight, etc.
- **QUALITATIVE VARIABLES**
  - A.k.a. = Categorical Variables
  - **"Unmeasurable"** variables
  - E.g. Gender, eye color, political affiliation, etc.

OTHER KINDS OF VARIABLES

EXPLANATORY VARIABLES

- it indicates direction of influences to what the researcher would like to discover.
- Types of Explanatory Variables
  - **Independent Variables** – considered to be the **cause**.
  - **Dependent Variables** – considered to be the **effect.**
- These are two variables which are interrelated & mainly observed in correlational, interventional, pre-experimental, quasi-experimental, experimental research studies.

GUIDELINES FOR INDEPENDENT AND DEPENDENT VARIABLES

- The dependent variable is always the property you are **trying to explain**; it is always the object of the research.
- The independent variable usually occurs **earlier in time** than the dependent variables.
- The independent variable is often seen as **influencing**, directly or indirectly, the dependent variable.
- E.g. The Relationship of Time Spent In Social Media and Students' Academic Performance
- **Remember : IV affects DV**
- **Examples :**
  - The impact of verbal abuse on teenager's social development.
  - People who attend church regularly are more likely to oppose abortion than people who do not attend church regularly.
  - Effects of quality of sleep to the quality of care provided by ICU nurses.
  - The impact of sex education to the incidence of teenage pregnancy.
  - A study of teacher-student classroom interaction at different levels of schooling.
  - A comparative study of the professional attitudes of secondary school teachers by gender.

EXTRANEOUS VARIABLES

- **Error**-producing variables (other than the IVs) that may impact the DV response.
- A.k.a.:
  - Intervening variables
  - Modifying variables
  - Confounding variables
- an uncontrolled variable that greatly influences the result of the study.
- Example:

- A study is conducted to assess the effect of two different pin site care protocols on prevention of pin site infection among patients with external skeletal fixation'.
- In this study, pin site care protocols are **independent variable**, pin site infection is the **dependent variable** .
- However, the dependent variable, pin site infection may also be influenced by some of the other factors such as low hemoglobin level or higher blood sugar level among these patients;
- these factors are considered as extraneous variables, which may have unwanted effect on dependent variables or research variables

INDEPENDENT	EXTRANEOUS	DEPENDENT
Playing Music in Grocery Store	Genre preference	Sales Increase
Use of Isopropyl Alcohol	Person's Age	Decrease body temperature
Use of nanotechnology	Surgeon's skills and training	Increase in Cancer Survival rate

CONTINUOUS vs DISCRETE VARIABLES

- **Abstract or Continuous Variables** – these are quantitative measures and statistically tested, Precision-based measurements
  - Ex. Girth, height, weight, BP 120/80.
- **Discrete/Scale variables**: variables that have a minimum-sized unit of measurement, which cannot be sub-divided or fractionated
  - Ex: the number children per family and Number of students per class

Research Variables

- In descriptive, exploratory, comparative, & qualitative research studies, variable are observed or measured in natural setting as they exist, without manipulating or imposing the effect of intervention or treatment.
- Here **no independent variable is manipulated & no cause-effect relationship** is examined; these variable are considered as research variable.
- Therefore, research variables can be defined as qualities, attributes, properties or characteristics which are observed or measured in a natural setting without manipulating & establishing cause-&-effect relationship.
- **For example:** An exploratory study on factors contributing to sleep disturbance among patients admitted in selected intensive care unit of AIMS, New Delhi". In this research study,
- "factors contributing to sleep disturbance" is a research variable, which is observed in natural setting without manipulating it.

Demographic Variables

- In most of the research studies, researchers make the attempt to study the **sample characteristics** & present them in research findings.
- Sometimes researchers even try to establish relations of the demographic variables with the research variables.
- These characteristics & attributes of the study subjects are considered as demographic variables.
- Common demographic variables are age, gender, educational status, religion, social class, marital status, habitat, occupation, income, & medical diagnosis etc.

Types of the Study	Example of Research Problem Statement	Variables
Descriptive	A descriptive study on prevalence of anemia among adolescent girls in selected villages of district Gulbarga, Karnataka.	Research variable: Prevalence of anemia
Exploratory	An exploratory study on contributing factors of anemia among adolescent girls in selected villages of district Gulbarga, Karnataka.	Research variable: Contributing factors of anemia
Correlational	A correlational study on smoking & lung cancer among slum dwellers of city Mumbai.	Independent variable: Smoking Dependent variable: Lung cancer
Comparative	A comparative study on health problems among rural & urban older people of district Mehsana, Gujrat.	Research variable: Health problems
Experimental	An experimental study on efficacy of oral morphine in management of chronic cancer pain among advanced stage cancer patients admitted in hospice at Mehsana.	Independent variable: Oral morphine Dependent variable: Chronic cancer pain
Quasi-Experimental	A quasi-experimental study of effect of needle gauge on pain perception among patients	Independent variable: Needle gauge Dependent variable: pain perception

Types of Researches

- Whether research is applied to **THEORETICAL** or **PRACTICAL** issues
- TYPES:
  - Pure/ Basic Research
  - Applied Research

Pure or Basic Research

- Deals with concepts, principles, or abstract things
- Attempts to expand the limits of knowledge
- Not directly involved in the solution to a pragmatic problem
- To **contribute to the general body of knowledge** in a particular area of interest
- E.g.
  - Theory of Stages of Grieving
  - Germ Theory of Disease
  - Assimilation Theory of Customer Satisfaction

Applied Research

- Applied to societal problems/issues, and finding ways to make positive changes in society

- focused on ***answering real-world, practical questions*** to provide relatively immediate solutions
- E.g.
  - Schools promoting the use of social media as a medium for learning
  - Providing calorie counts in Restaurant Menu

Based on Purpose of Research

1. Descriptive Research

- Aims at describing or giving a verbal portrayal or picture of a person, thing, event, group, situation, etc.
- Liable to repeated research because topics relates only to a certain period/limited years
- Examples:
  - Consumers' perception of the best phone to purchase
  - The Filipino street foods
  - Common test taking errors of high school students

2. Correlational Research

- Shows relationships or connectedness of two factors, circumstances, or agents
- Concerned on existence of relationship not the causes & ways of development
- Examples:
  - Relationship between nutritional labels & consumer buying behavior
  - Age &Pregnancy outcomes
  - English Skills and Mathematical skills

3. Explanatory Research

- Elaborates or explains not just the reasons behind relationships but also ways by which such relationship exists
- Examples :
  - Reasons behind increasing incidence of teenage pregnancy
  - Factors influencing consumer SIM card preference

4. Exploratory Research

- Determines the nature of the problem thus helps to have a better understanding of the problem
- Does not intend to offer final and conclusive solutions to existing problems.
- Two forms: either a NEW TOPIC or a NEW ANGLE
- Examples:
  - Millennial marketing strategies
  - Challenges of a nurse caring for a pediatric cancer patient

5. Action Research

- Studies on ongoing practice of a school, organization, community, or institution to obtain results that will bring improvements in the system
- Examples:
  - A principal studying teacher burnout and dissatisfaction in a local school context,
  - A group of teachers studying classroom discipline problems in their unique classrooms.

Based on Type of Data Needed

A. Quantitative Research

- concerned with the ***objective meaning*** thus involves measurement of data
- Presents research results referring to number or frequency of something in numerical forms
- Can be subjected to statistical analysis
- Examples:
  - Efficiency of a wind generator in converting energy to electricity
  - Best marketing strategies that improve sales

B. Qualitative Research

- concerned with ***subjective meaning*** thus not measurable
- Uses words rather than numbers to express the results
- Commonly about peoples' thoughts, beliefs, feelings, views, and lifestyle
- Example:
  - Experience of owners of small scale businesses that eventually becomes a big time business.

	Qualitative	Quantitative
Focus	Quality or meaning of experience	Quantity, frequency, magnitude
Philosophical Roots	Constructivism, interpretivism	Positivism
Goals of Investigation	Understand, describe, discover	Predict, control, confirm, test
Design Characteristics	Flexible, evolving, emergent	Structured, predetermined
Data Collection	Researcher as instrument	External Instruments: tests, surveys

QUANTITATIVE vs QUALITATIVE RESEARCH

	QUALITATIVE	QUANTITATIVE
Type of Question	Probing	Simple
Sample Size	Small	Large
Questioner's skill	High	Low(ish)
Data expression	Verbal language	Numeric
Type of analysis	Subjective , Thematic codal	Objective , Statistical
Ability to replicate	Low	High
Areas probed	❖ Attitudes ❖ Feelings ❖ Motivations	❖ Choices ❖ Frequency ❖ Demographics