Research Problems, Research Questions, and Hypotheses

By: Omar AL-Rawajfah, RN, PhD
**Definition of Terms**

- **Research Problem:**
  - A situation involving an enigmatic, and conflictful condition

- **Problem statement**
  - Summary of the research problem that needs to be answered or solved

- **Research Problems**
  - Quantitative vs. Qualitative
Sources of Research Problems

- Experience
  - Clinical practice
  - Administration
  - Education

- Nursing Literature
  - Few studies have addressed
  - Previous studies didn’t examine

- Social Issues

- Requests for Proposals

- Theories

- Ideas from External Sources
Significance, Researchability, and Feasibility of Research Problems

- How important to nursing
- Can the problem be studied
- Is the study a feasible one:
  - Time
  - Participants
  - Facilities and resources
  - Experience of researchers
You can’t study all aspects of your problem

Record all questions that came to your mind about your problem

Review the literature related to your questions
Communicating the Research Problem

- **Statement of the problem**
  - *E.g.,* "Furthermore, various studies worldwide have examined the level of compliance of healthcare workers with infection control guidelines. However, there were no studies in Jordan that assess infection control practices among nursing staff in Jordanian hospitals. Moreover, information about compliance of Jordanian nursing staff with infection control guidelines is also limited."

- **Statement of Purpose**
  - Study variables
  - Population of the study
    - *E.g.,* "The purpose of this study is to evaluate the infection control practices among nursing staff in Jordanian hospitals at the national level. Furthermore, this national study aims to evaluate knowledge and attitude regarding infection control among Jordanian nursing staff."
Definition of Terms

Statement of Purpose

- Researcher’s summary of overall goal of the study
  - The purpose of this study is to evaluate the infection control practices among nursing staff in Jordanian hospitals at the national level. Furthermore, this national study aims to evaluate knowledge and attitude regarding infection control among Jordanian nursing staff
Definition of Terms

Research Objectives or specific aims

Specific accomplishments the researcher hopes to achieve by conducting the study

- To assess the infection control practices in the Jordanian hospitals;
- To identify potential gap between Jordanian nursing staff infection control knowledge and their infection control practices;
- To explore the relationship between Jordanian nursing staff attitudes toward infection control and their infection control knowledge; and
Communicating the Research Problem

Research Questions

- Specify the purpose
- Directness
- *E.g., “*
  - What are the Jordanian nursing staff infection control practices?
  - Is there a relationship between Jordanian nursing staff attitude toward infection control and their real practice?
  - Is there a relationship between Jordanian nursing staff attitude toward infection control and their level of infection control knowledge?
Quantitative Research Questions:

- **Existence of relationship:**
  - Is there a relationship between level of experience and hand washing practice among Jordanian staff nurses

- **Direction and Nature of Relationship:**
  - Do Jordanian male nurses wash their hand more often than female nurses?

- **Strength of relationship**
  - How strong is the relationship between experience and hand washing practice
Qualitative Research Questions:

- **Process:**
  - How the nurse–patient relationship evolved and developed?

- **Meaning:**
  - What are the meanings of isolation for cancer patients who are living in infection isolated rooms?

- **Descriptive:**
  - What are the life experiences for Jordanian HIV positive?
The Research Hypothesis

What is research hypothesis?
- Predictive or explanatory statement
- Conjectural statement of the relation between 2 or more variables
- Derived from the research question
- Present answer of research question
  - Staff nurse with high knowledge demonstrate higher compliance rate with infection control practice than those with low knowledge
  - Students who study the textbook score more in their exam than who don’t study from textbook
- Always be written before the study and should not be changed after the study result examined
The Research Hypothesis

- **Purposes of Hypotheses?**
  - Specify the part of a theory being tested
  - Advance scientific knowledge by either supporting or rejecting the hypotheses
  - Guide the research design and statistical analysis
  - Link the dependent and independent variables
  - Provide the reader with an understanding of the researcher’s expectations

- **Characteristics of workable hypotheses**
  - State the relationship
  - Relational aspect
The Research Hypothesis

- Wording of the hypotheses
  - Simple (univariate)
    - One independent and one dependent variable
    - *E.g., “taking notes in the lecture is positively associated with the student’s final score”*
  - Complex (Multivariate)
    - 2 or more independent and 2 or more dependent
    - *E.g., “taking notes in the lecture is positively associated with the student’s final score and their GPA”*
The Research Hypothesis

- **Wording of the hypotheses**
  - **Directional hypotheses**
    - *E.g.*, “taking notes in the lecture is positively associated with the student’s final score”
  - **Non directional hypotheses**
    - *E.g.*, “there is relationship between taking notes in the lecture and the student’s final score”
  - **Research Hypotheses, Alternative Hypotheses** ($H_1$)
  - **Null Hypotheses** ($H_0$), statistical, scientific, or theoretical
    - Level of significant should be set before starting analysis (usually 0.05)
    - *E.g.*, “there is no relationship between taking notes in the lecture and the student’s final score”
Hypotheses Criteria

- Written in declarative sentence
- Written in past tense
- Contain population
- Contain variables
- Reflect the problem statement and the purpose
- Empirically tested