

# **Research Methodology & Biostatistics**

**Dr Ashok Kumar Yadav (PhD,MBA(HM),MSc(N),BHMS,BSc)**

**Dean & Principal  
HOD & Professor Mental Health Nursing  
Faculty of Nursing  
Tantia University  
Sriganganagar**

# Research and Research Process

- **Introduction**:-Nursing is an art and science, in science research play a vital role. Research is based on scientific phenomenon. Research provides a solid foundation on which nurse can develop and enhance their professional knowledge and practices, like infant care, pain management, grief counseling, client education and many more such intervention.

- Research is a systematic inquiry, uses disciplined method to answer questions or solve problems.
- Nursing research is a systematic inquiry designed to develop knowledge about the issues of importance to nurses, including nursing practice, education and administration  
Nurses are increasingly engaged in disciplined inquiries that benefit both the profession and client.

# Meaning and Definition of Research and Nursing research

- Research:- The word research is composed of a prefix “re” and a verb “search” , Re means once again, a new or a fresh and search means to look for something, to examine carefully, to look for information, to test or to prove. So research means close and careful examination of facts and their relationship to discover new knowledge.

- “Research is defined as a systematic and scientific process to answer questions about facts and relationship between facts”.
- “Research is a scientific, systematic, controlled, orderly and objective investigation to develop, refine and expand body of knowledge.
- “Research is a process of systematically searches for new facts and relationship.

- Nursing Research:- According to American Nurse's Association (1932)- The development of knowledge about health and promotion of health over full life span, care of person with health problems and disabilities and nursing actions to enhance the ability of individuals to respond effectively to actual or potential health problems.

- According to Polit and Hungler – “Nursing research is a process in which the researcher scientifically collects data to be used in clinical, administrative or instructional area in order to find solutions to nursing problems, evaluate nursing practices, procedures, policies or curriculum, assess the needs of the patient, staff or student and make decision to change or continue various nursing process which in turn advances the scientific knowledge in nursing field.

- According to International Council of Nurses (1986):- “Nursing research is a way to identify new knowledge, improve professional education and practices and use of resources effectively.
- “Nursing research refers to use of systematic, controlled, empirical and critical investigation in attempting to discover or confirm facts that relate to specific problem or question about the practice of nursing.  
(Walls and Bauzell,1981)



# Needs and Purposes of Nursing Research

- Develop and refine nursing theories and principles.
- Provide foundation for evidence-based nursing practices.
- Enhance the educational system and curriculum in nursing.
- Develop and refine the scientific based knowledge, which are required for quality nursing care, education and administration.

- Enhance the body of professional knowledge in nursing.
- Help in expansion of knowledge, which is essential for continued growth of nursing profession.
- Enhance professional identity as research is an essential component of profession.
- Define the parameters of nursing, which will help nurses to identify boundaries of nursing profession.

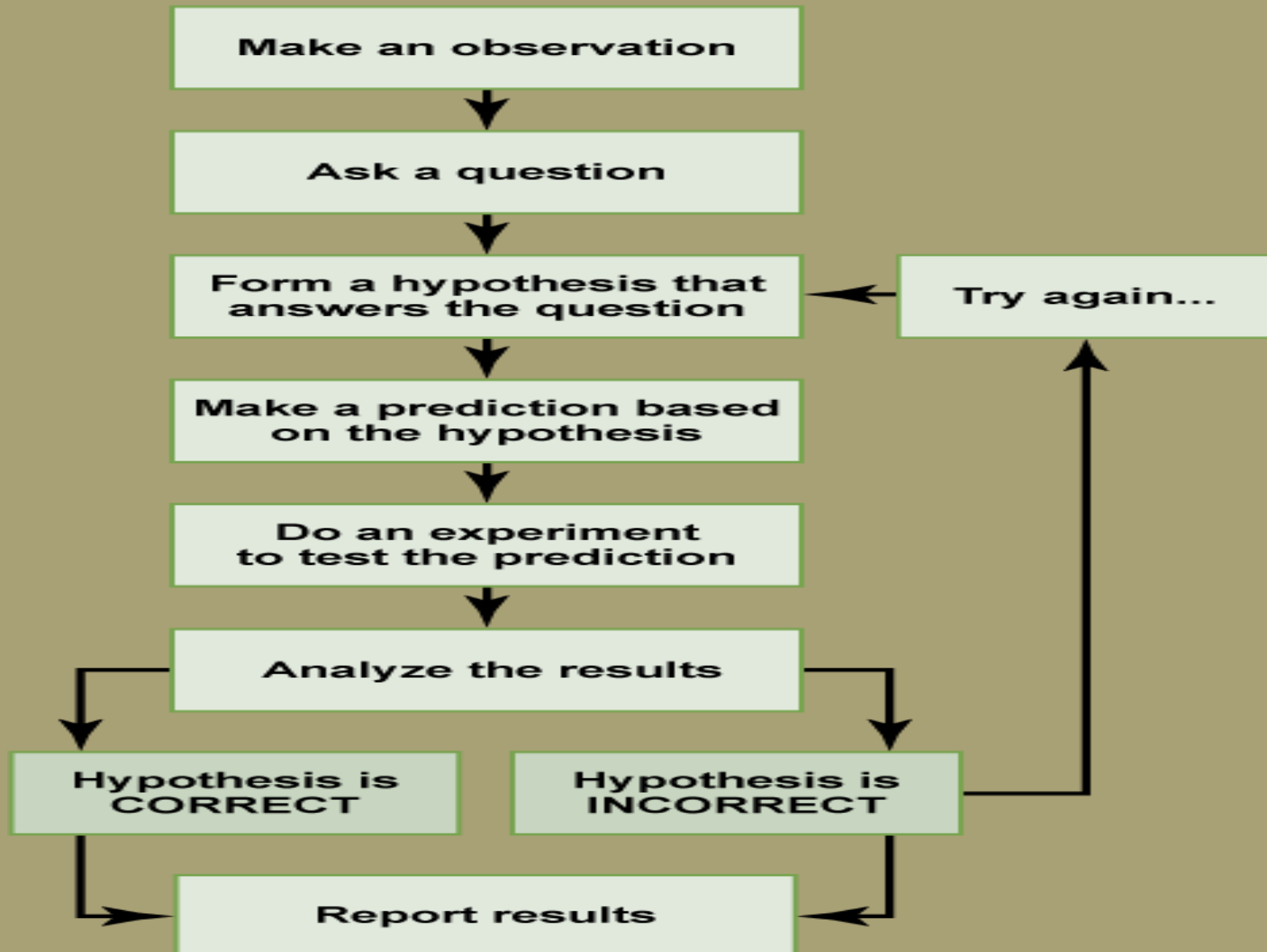
- Refine and eliminate old knowledge, it helps in elimination of nursing actions that have no effect on the achievement of desired client outcomes.
- Identify nursing care practices that make a difference in health care status of individual and are cost-effective.
- Enhance accuracy of different nursing educational and administrative techniques.
- Solve the problems and answer questions related to nursing practice, nursing education and nursing administration.

# Characteristics of Good Research

1. Research originates with a question or problem.
2. Research require clear articulation of a goal.
3. Follow a specific plan or procedure.
4. Often divides main problem into sub problem.
5. Accept certain critical assumption.
6. Research requires collection and interpretation of data.
7. Research demands accurate observation and description.
8. Research carefully designed.
9. Research requires expertise.
10. Research carefully recorded and reported.

11. Empirical – based on observation and experimentation on theories.
12. Systematic – follows orderly and sequential procedure.
13. Research must be based on current professional issues.
14. Research is started with clearly defined purposes.
15. Strive to collect first-hand information/data:-collection of data directly from subjects by different methods like questioning, interviews or observation.
16. Use of most appropriate and suitable methodology.
17. Use of valid and reliable data collection tools.
18. Research needs lots of time and patience.
19. Adequately communication: - information generated is adequately disseminated to its users.

# Scientific Research Method



## EXAMPLES

To better understand the process of the scientific method, take a look at the following example:

**Observation:** My toaster doesn't work.

**Question:** Is something wrong with my electrical outlet?

**Hypothesis:** If something is wrong with the outlet, my coffeemaker also won't work when plugged into it.

**Experiment:** I plug my coffeemaker into the outlet.

**Result:** My coffeemaker works!

**Conclusion:** My electrical outlet works, but my toaster still won't toast my bread.... and refine the hypothesis: My toaster is broken. From this point, the process would be repeated with a refined hypothesis

# Phases and Steps of Research Process

## Phase 1: The conceptual Phase.

- Step 1. Formulation of Research Problem.
- Step 2. Determining study objective.
- Step 3. Review of literature.
- Step 4. Developing conceptual framework.

## Phase2: The Design and Planning Phase

- Step 5. Formulating hypothesis/assumption.
- Step 6. Selecting research approach/design.
- Step 7. specifying the population.
- Step 8. Developing tools.
- Step 9. Establishing ethical tools.
- Step 10. Conducting pilot study.
- Step 11. Sample selection.



- **Phase 3: The Empirical Phase**

- Step 12. Data Collection.
- Step 13. Preparing data for analysis.

- **Phase 4 :The Analytic Phase**

- Step 14. Analysis and interpretation of data
- Step 15. Interpreting the Result.

- **Phase 5 : The Dissemination phase**

- Step 16. Disseminating the research finding.
- Step 17. utilizing the Findings.

THANK YOU