



# **SNS COLLEGE OF NURSING SARAVANAMPATTI COIMBATORE**

**COURSE : B.Sc Nursing III Yr**

**SUBJECT : Nursing research and Statistics**

**UNIT : I ( Research and research process)**



# RESEARCH



## DEFINITION

- **Research** is the systematic inquiry that uses disciplined methods to answer questions or solve problems. – Polit.
- **Nursing research** is systematic inquiry designed to develop evidence about issues of importance to nursing profession including nursing practice , nursing education and administration.- Polit.

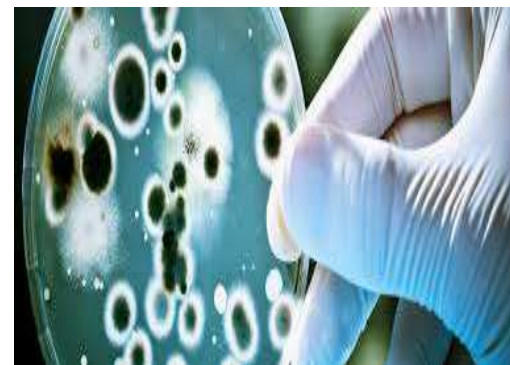


# NEED FOR NURSING RESEARCH



To,

- Provide **evidence** to nurses clinical actions and decisions.
- **Integrate nursing research and EBP ( Evidence Based Practice )**
- Promote **broader** clinical changes from local initiatives by the nurses.
- Develop **new** clinical **knowledge** and skills based on research findings.
- Find out what works best for the patients.



(a) Results of organism identification 33% inaccuracy

Antibiotic class	Lab 1	Lab 2	Lab 3	Lab 4	Lab 5	Lab 6
Case 1	Pic ac	Wund erber <sup>®</sup> Pic ac	Wund erber <sup>®</sup> Pic ac	St. Proteinos <sup>®</sup> Pic ac	Pic ac	Pic ac
Case 2 <sup>†</sup>	Pic ac	St. Proteinos <sup>®</sup>	St. Proteinos <sup>®</sup>	St. Proteinos <sup>®</sup>	St. Proteinos <sup>®</sup>	St. Proteinos <sup>®</sup>
Case 3 <sup>†</sup>	VRE	Ext. fusison	VRE fusison	Ext. fusison	VRE	VRE
Case 4 <sup>†</sup>	St. Proteinos <sup>®</sup>	St. Proteinos <sup>®</sup>	St. Proteinos <sup>®</sup>	St. Proteinos <sup>®</sup>	St. Proteinos <sup>®</sup>	Loss of viability

<sup>†</sup>Reported antibiotic organism is correct and would be selected for treatment. <sup>‡</sup>Failure in antimicrobial susceptibility result. <sup>§</sup>Not identified and reported by laboratory as same - changes by person for the doctor completely - the reason of quality in laboratory testing

(b) Antimicrobial susceptibility result

indicating 'discrepancy' in advice on antibiotic

QC case	Case 2	Case 3
Organism	St. Proteinos <sup>®</sup>	Ext. fusison (VRE)
Antibiotic	Amp and pen	CTX
		Nitrofurantoin
Lab 1	S	R
Lab 2	S	NT
Lab 3	S	NT
Lab 4	S	S
Lab 5	R	NT
Lab 6	S	S

Note: We display in Microbiology susceptibility and all of lab work held in practice exactly the same report for any one antibiotic - the reason of quality in laboratory testing. 'NT' included in the final report to doctor as 'ST' but not.





# NEED FOR NURSING RESEARCH



To,

- Mould the **attitude and intellectual** competence of the nurses.
- **Fill the gap** between knowledge and practice.
- Provide **base** for professional accountability.
- Improve the **standards** of nursing education.
- Refine the existing **theories** and to discover new theories.




## Accountability

*(a-kaun-to-bi-to)*

An acceptance of responsibility for honest and ethical conduct towards others.

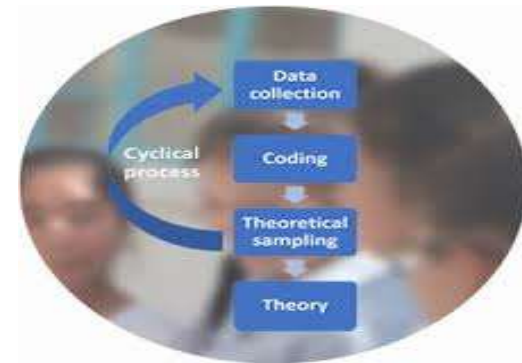
 Investopedia



### Continue Your Nursing Education

- Stay updated on industry trends
- Maintain your nursing credentials
- Strengthen your existing clinical skills
- Learn new clinical skills
- Learn about new treatment regimens
- Adapt to technological advances in the industry
- Reduce legal risks to you and your employer

 indeed

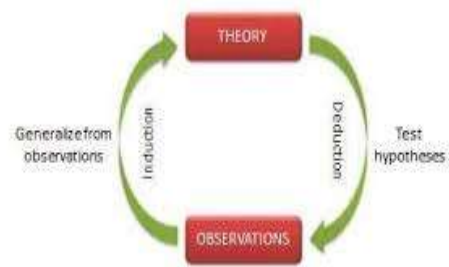




# SCIENTIFIC METHOD



- **Scientific methods** are defined as a set of orderly, systematic, controlled procedure for acquiring empirical information.
- **Scientific methods** are characterized by induction and deduction together and form a good system of obtaining knowledge having more reliability than the traditional one.







# CHARACTERISTICS OF SCIENTIFIC METHOD



**Orderly Fashion**

**Control**

**Empiricism**

**Generalization**

**Theory**



# CHARACTERISTICS OF SCIENTIFIC METHOD



- **Orderly Fashion-** Research should be conducted in an orderly manner of all scientific steps.
- **Control** – In a scientific research all external factors and extraneous variables needs to be controlled to get the actual result without bias.
- **Empiricism** – In all scientific research, Data should be gathered in reality.





# CHARACTERISTICS OF SCIENTIFIC METHOD



- **Generalization** – Scientific method involves new knowledge which can be applied generally, not as isolated cases.
- **Theory** – Scientific methods provide new knowledge through various investigations which will develop theories.



# PURPOSES OF SCIENTIFIC METHOD

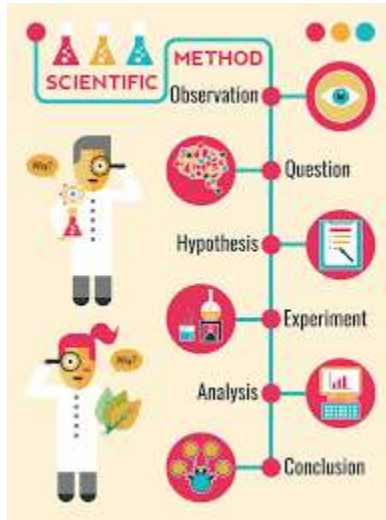


## BASIC RESEARCH

- To extend the base of knowledge in a discipline or to refine a theory.

## APPLIED RESEARCH

- Focuses on finding solution to existing problems.



## Basic Research





# PURPOSES OF SCIENTIFIC METHOD



## IDENTIFICATION RESEARCH

- To study a phenomenon about which a little is known.

## DESCRIPTION RESEARCH

- Focuses on prevalence, incidence, size, and measurable attributes of a phenomenon.







# PURPOSES OF SCIENTIFIC METHOD



## EXPLORATION RESEARCH

- To investigate the full nature of a phenomenon in depth.

## EXPLANATION RESEARCH

- To understand the underpinnings of natural phenomenon & to explain systematic relationship among phenomena.



**Exploratory  
Research**



## Exploratory Research



**Explanatory  
Research**



EDITABLE STROKE

## Explanatory Research





# PURPOSES OF SCIENTIFIC METHOD



## PREDICTION

- To investigate what will happen if we alter a phenomena or introduce an intervention.

## CONTROL

- To understand how can we make the phenomenon happen or alter its prevalence?

# Prediction





# CHARACTERISTICS OF GOOD RESEARCH



Nursing research should be,

- Carefully designed.
- Objective and logical.
- Begin with clearly defined purposes.
- Directed towards the solution of a problem.
- Based upon observable experience or empirical evidence.
- Should emphasize the development of generalization of principles or theories.
- Should gather new data from primary source of data.





# CHARACTERISTICS OF GOOD RESEARCH



## Nursing research should be,

- Based on current professional issues.
- Emphasize to develop, refine, and expand professional knowledge.
- Strive to collect first hand information/data.
- Conducted on representative sample.
- Based on researcher's expertise, interest, motivation and courage.



# STEPS OF RESEARCH PROCESS - OVERVIEW



1. Conceptual phase

2. Designing and planning phase

3. Empirical phase

4. Analytical phase

5. Dissemination phase



# PHASE 1 : CONCEPTUAL PHASE



1. Formulating and delimiting the problem.
2. Reviewing the related literature
3. Undertaking clinical / field work.
4. Defining the conceptual framework.
5. Formulating hypothesis.







# PHASE 1 : CONCEPTUAL PHASE



## 1. Formulating and delimiting the problem.

- First Identify an interesting , significant research problem and research questions. Common sources of research problems are given below.

### Examples:

- **Substantive issues:** is the research question is important?
- **Theoretical issues:** Is there broader conceptual context to understand the research problem?



# PHASE 1 : CONCEPTUAL PHASE



- **Clinical issues** : Could research findings be useful in clinical setting?
- **Methodological issues**: How can this question be studied to yield evidence ?
- **Ethical issues**: Can this question be rigorously addressed without ethical transgressions?





# PHASE 1 : CONCEPTUAL PHASE



## 2. Reviewing the related literature

- Quantitative research is conducted within the context of previous knowledge. It is must for a researcher to know about what is already known about a research problem.
- A thorough literature review provides a foundation on which to base new evidence and usually is conducted well before data collection.
- For clinical problems, it is preferable to review the existing practice guidelines.





# PHASE 1 : CONCEPTUAL PHASE



## 3.Undertaking clinical field work

In addition to clinical knowledge, clinical field work is required in clinical based research studies. Further it helps to develop methodological strategies also. Activities in clinical field work includes,

- Observe the clinical setting first.
- Discuss with clinician.
- Monitor current practices and current clinical trends.





# PHASE 1 : CONCEPTUAL PHASE



## 4. Defining the conceptual framework

- When a Research is performed with in the context of theoretical framework, the findings may have broader significance and utility.
- When the research question is not embedded in a theory, there must be a clear sense of concepts under study that is development of conceptual definitions to be done.

## Conceptual Framework



M

**Conceptual Framework**

A graphic with a red background. On the left, there is a 3x3 grid of nine circular icons representing various data analysis and research tools: a calculator, a bar chart, a magnifying glass, another bar chart, a calculator, a document with a magnifying glass, a document, a donut chart, and another bar chart. To the right of the grid, the text 'Conceptual Framework' is written in a large, white, bold font. In the top right corner of the red area, there is a small white circle containing the letter 'M'.





# PHASE 1 : CONCEPTUAL PHASE



## 5. Formulating hypothesis

It is a statement of researcher's expectation about relationship between study variables, that is expected results of a study.

Ex:

**Research question:** Is pre eclamptic toxemia is related to stress?

**Hypothesis:** women with stress will be more likely than women without stress to experience pre eclamptic toxemia.

### What Makes a Good Hypothesis?



1 A solid question

2 Background research

3 Making sure it's testable

4 Independent and dependent variables

verywell



## PHASE 2 : DESIGNING AND PLANNING PHASE



6. Selecting research design.
7. Developing intervention protocol.
8. Identifying the population.
9. Designing the sampling plan.
10. Specify the methods to measure research variables.
11. Develop methods to safeguard subjects.
12. Finalize research plan.



# PHASE 2 : DESIGNING AND PLANNING PHASE



## 6. Selecting research design.( back bone of a study)

- Research design is the overall plan for obtaining answers to the research question.
- Select a suitable design and take measures to reduce bias and to enhance the interpretability of results. It also should specify
- data collection points.
- What type of comparison will be made?
- Setting of the study?



# PHASE 2 : DESIGNING AND PLANNING PHASE



## 7. Developing intervention protocol.

- In experimental study, intervene and create the independent variable that is intervention.
- Samples will be exposed to different treatments and conditions. Intervention protocol should specify in depth about,
  - Who will administer? How frequently? How long?
  - What would be the alternative condition?
- This step is not required for non experimental study.



# PHASE 2 : DESIGNING AND PLANNING PHASE



## 8. Identifying the population.

- Population is all the individuals or objects with common , defining characteristics.
- **Ex.** All clients with type II diabetes mellitus in India.
- Researcher must know what characteristics the samples should possess and to whom the results can be generalized.





# PHASE 2 : DESIGNING AND PLANNING PHASE



## 9. Designing the sampling plan

- Data will be collected from a sample, which is a subset of population. The sampling plan should specify in advance how the samples will be selected, recruited, how many samples.
- Always select representative sample that is how typical or representative the sample is of the population.



# PHASE 2 : DESIGNING AND PLANNING PHASE



## 10. Specify the methods to measure research variables

- Researcher should identify or design appropriate methods to measure variables.
- A variety of data collection tools are available .

**For ex,**

- Self reports - interviews
- Observations
- Bio physiologic measurements





# PHASE 2 : DESIGNING AND PLANNING PHASE



## 11. Develop methods to safeguard subjects.

- Most of the nursing research involves human subjects and few studies may involve animals.
- In either case, steps to be taken to confirm the rights of subjects have been adequately protected.



# PHASE 2 : DESIGNING AND PLANNING PHASE



## 12. Finalize research plan.

- It is must to do a number of test to ensure that research plan will work smoothly.
- Get your research plan critiqued by peers, and experts.
- Conduct a pilot study , before conducting the main study.

# PHASE 3 : EMPIRICAL PHASE

13. Collecting the data.

14. Preparing the data for analysis.





# PHASE 3 : EMPIRICAL PHASE



## 13. Collecting the data.

- Data collection may require several weeks or even months.
- Data collection plan should specify ,
- Data collection tool.
- Where and when the data will be collected.
- How to record the data.



# PHASE 3 : EMPIRICAL PHASE



## 14. Preparing the data for analysis

- Collected data needs to be processed for analysis. Data needs to be coded.
- Coding- It is translating verbal data in to numerical form.
- Transfer the data from written documents in to computer files for analysis.

# PHASE 4 : THE ANALYTIC PHASE

15. Analyzing the data.

16. Interpreting the results.





# PHASE 4 : THE ANALYTIC PHASE



## 15. Analyzing the data.

- Collected data is analyzed through a variety of statistical methods starting from simple computations to sophisticated methods.
- Computers have eliminated the need to get bogged down with detailed mathematic operations.



# PHASE 4 : THE ANALYTIC PHASE



## 16. Interpreting the result

- It is the process of making sense of study results.
- Researcher will explain the findings in the light of prior evidence and theory.
- It should also specify how the findings can be used and recommendations for future research.





# PHASE 5 : THE DISSEMINATION PHASE



17. Communicating the findings.
18. Utilizing the findings in practice.





# PHASE 5 : THE DISSEMINATION PHASE



## 17. Communicating the findings.

- Research reports to be prepared and shared with others.
- It can take various forms like Dissertations, journal articles, presentations at conferences etc..



# PHASE 5 : THE DISSEMINATION PHASE



## 18.Utilizing the findings in practice

- It is a concluding step used to plan for its use in practice settings.
- In a research report a recommendation should be included regarding how the evidence from the study could be incorporated in to the practice of nursing.



# SUMMARY



- Unit I covers all the main and sub topics of RESEARCH AND RESEARCH PROCESS in brief . It includes definition, need for nursing research, characteristics of good nursing research and steps of research process .



# REFERENCES



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