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**SCIENTIFIC METHODS
OF RESEARCH**

DEFINITION OF SCIENTIFIC METHODS

Scientific methods are defined as controlled, systematic investigations that are rooted in objective reality & that aim to develop general knowledge about natural phenomena.

CHARACTERISTICS OF SCIENTIFIC METHODS

- ✎ They are orderly & systematic processes.
- ✎ Scientists attempt to control external factors that are not under direct investigation.
- ✎ Their findings are based on the empirical evidences.
- ✎ Findings of scientific methods can be generalized, which means that they can be used in situations other than the one under study.
- ✎ Scientific methods are based on assumptions or hypothesis.
- ✎ They are basically conducted to develop or test hypothesis.

PURPOSES OF SCIENTIFIC METHODS

The basic purposes of scientific methods are description, exploration, explanation, prediction, control, prescription, & identification of relationship of the facts.

STEPS OF SCIENTIFIC METHODS

- ▣ Selecting the topic & identifying the research problem
- ▣ Defining the objectives of the study.
- ▣ Reviewing the literature from theory & other related studies.
- ▣ Defining concepts & variables to be studied.
- ▣ Stating hypothesis about expected observations or phenomenon to be studied.

STEPS OF SCIENTIFIC METHODS

- ▣ Determining the ethical implication of the proposed study.
- ▣ Describing the research design & methods for data collection.
- ▣ Defining study population & sample.
- ▣ Planning the data analysis & discussion.
- ▣ Collecting data from subjects.
- ▣ Analyzing & interpreting data.
- ▣ Communicating finding of the study.



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LIMITATIONS OF SCIENTIFIC METHODS

1. Moral or ethical problem
2. Human complexity
3. Measurement problems
4. External variable control problems

LIMITATIONS OF SCIENTIFIC METHODS

- 1. Moral or ethical problem**
 - ▶ Most nursing studies would require humans as the subject of their research.
 - ▶ The constraint of involving humans, which is essential for observing human behavior for experimentation, is one such ethical problem.
 - ▶ Thus, reliable scientific data cannot always be collected

LIMITATIONS OF SCIENTIFIC METHODS

2. Human complexity

- ▶ Human behavior is complicated, subtle & varied
- ▶ It is very difficult to categorize human behavior
- ▶ When human behavior is studied & analyzed by other human beings, the personal biases come into the picture & distort the analytical facts.

LIMITATIONS OF SCIENTIFIC METHODS

3. Measurement problems:

- ▶ Different aspects of human behavior are psychological in nature, which cannot be accurately measured.
- ▶ Human behavior is not uniform, certain, or predictable.
- ▶ All the people do not behave in the same way in similar circumstances.
- ▶ Therefore, with humans as subjects,

LIMITATIONS OF SCIENTIFIC METHODS

4. ***External variable control problems***

- ▶ Scientific studies conducted on humans may have a limitation of weak or no control over external variables in scientific activity.