

# Types Of SCIENTIFIC RESEARCH



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# Types of Scientific Research

- Quantitative Vs Qualitative research.
- Descriptive Vs Explanatory Vs Predictive research.
- Basic (pure) Vs applied research.

**Quantitative**

**Vs**

**Qualitative research**



## ***Quantitative research:***


- It seeks to ***convert observations to numbers.***
- Testing of hypotheses based on a ***sample of observations***, and a ***statistical analysis of the data.***
- Attempt to describe ***relationships among variables mathematically.***

## *Types of questions asked:*

- Often *describe variables*,
- *Examine relationships* among variables, and
- determine *cause-and-effect interactions* between variables.



## ***Examples of quantitative research questions***


- ***What support factors in the work environment are most important in determining the level of job satisfaction experienced by nurses in critical care units?***
- ***What is the relationship between use and need of nursing services in the rural areas?*** 

## *Qualitative research:*

- Emphasizes *verbal descriptions* and *explanations* of human behavior,
- The *tools* for gaining information include: participant *observation*, in-depth *interviews*, or an in-depth *analysis* of a single case.



## ***Examples of qualitative research questions***

- ***What is the meaning of the experience of participating in public health education sessions for mental health clients?***
- ***How do nurses handle patients who refuse to follow instructions?***
- ***What is it like to be diagnosed with a terminal illness?*** 



**Descriptive**

**Vs**

**Explanatory**

**Vs**

**Predictive research**

## **a. Descriptive research** *(Exploratory research)*

- Emphasizes the accurate description of some aspect of society.
- A researcher assesses specific characteristics of individuals, groups, situations, or events by summarizing the commonalities found in discrete observations.



a. Descriptive research  
(*Exploratory research*): (Cont.)

- The descriptive research is directed toward studying "*what*" and *how many* of this "*what*". Thus, it is directed toward answering questions such as, "**WHAT IS THIS?**".

## *Example of descriptive research questions*

- *To explore the differences between female students who initiate smoking in their teen years and female students who do not smoke, a researcher would want to describe the characteristics of the two sets of the students.*

*1. Are rural students more likely to be nonsmokers in their teen years?*

*2. Are young women from higher socioeconomic levels more likely to initiate smoking during adolescence?* 



## b. Explanatory research


- Its primary *goal* is to *understand* or to *explain* relationships.
- It uses *correlations* to study *relationships between dimensions or characteristics* of individuals, groups, situations, or events.

## b. Explanatory research

- Explanatory research explains (***HOW THE PARTS OF A PHENOMENON ARE RELATED TO EACH OTHER***).
- Explanatory research asks the "***WHY***" question.



# *Example of explanatory research question*

- *"Why do female students from higher socioeconomic levels are more likely to start smoking during teen years than those of lower socioeconomic levels?"  
Here there are two involved questions:*
  - *What is the relationship between socioeconomic background and initiation of smoking behavior?*
  - *If there is a relationship, why does it exist?* 

## c. Predictive research

- Moves *beyond explanation* to the *prediction of precise relationships between dimensions or characteristics* of a phenomenon or differences between groups.



## *Example of predictive research question*

- *What are the risk factors for postoperative pulmonary complications after total abdominal hysterectomy?*

*Thus, the aim of this study was to "identify risk factors that could predict postoperative pulmonary complications after total abdominal hysterectomy".*



**Basic (pure)**

**Vs**


**Applied research**



## a. Basic research

- Focuses on *understanding phenomena* of interest.
- Conducted to *accumulate information, extending the base of knowledge* in a discipline to *improve understanding*, or to *formulate a theory*.
- It is appropriate for *discovering general principles* of human behavior and biophysiology processes.

## *Example of a basic research concern*

*The nurse scientist who accumulate information in order to further our understanding of **relationship between socioeconomic status and the intention to follow a healthy diet** is engaging in a **basic research**.* 



## b. Applied research

- Focuses on *finding an immediate solution to an existing problem.*
- Designed to indicate *how the principles of human behavior can be used to solve problems in nursing practice.*

## *Example of an applied research*

*The nurse researcher may want to increase attendance at weekly prenatal classes for young- aged women, and thus would test the effectiveness of an intervention such as attending to the hospital at labor signs.*



## *Characteristics of a scientific research*

- Include a ***problem*** that need a solution or a ***question*** that need an answer.
- Should achieve a ***general objective*** rather than a personal objective.
- Should follow the ***scientific approach*** that characterized by order and control.

# *Characteristics of a scientific research*

- It should add ***new information*** through:
  - New facts that was not known before.
  - Validates results of previous research.
  - Tests theories.
  - Explains findings of a previous research.
  - Find out new relationships among present phenomena.



# *Characteristics of a scientific research*

- Research results should **be liable** to:
  - **Testing** \_\_\_\_\_ when another researcher choose the same \_\_\_\_\_ problem and follows the same steps, he/she probably gets the same results.
  - **Generalization** \_\_\_\_\_ that is the results could be generalized from the study sample to the study population.
- The research should be **ethical** (i.e., does not violate the rights of patients, profession, community, or the researcher him/her self).

## ***Limitations of the scientific research:***

- Inadequate for addressing moral or ethical questions (e.g., Should abortion be legal?).
- It must contend with problems of measurement, thus, any phenomena must be translated to measurable items.
- Focuses on a relatively small portion of the human experience (e.g., weight gain, depression) in a single study.



*Learning exercise*



***QUESTIONS***