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 research

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 PHINOMINON 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