Introduction to scientific research
unit one

The nursing profession exists to provide a service to society, and this service should be based on accurate knowledge. Research has been determined to be the most reliable means of obtaining knowledge.

Research is <u>systematic inquiry</u> that uses <u>disciplined</u> <u>methods</u> to <u>answer questions</u> or <u>solve problems</u>.

Nursing research : is systematic inquiry designed to develop knowledge about issues of importance to the nursing profession, It includes studies concerning nursing practice, nursing education, nursing administration, and nurses themselves

Evidence-based nursing practice(EBNP)
Broadly defined as the <u>use</u> of the <u>best clinical evidence</u> in making patient care decisions, there is general agreement that research findings from strictly accurate studies constitute the best type of evidence for informing nurses' decisions, actions, and interactions with clients.

Most people would agree that research in nursing began with Florence Nightingale. Her landmark publication, *Notes on Nursing* (1859), describes her early interest in environmental factors that promote physical and emotional well-being.Nursing research began with Florence Nightingale but developed slowly until its rapid acceleration in the 1950s. Since the 1970s, nursing research has focused on problems relating to clinical practice.

PURPOSES OF NURSING RESEARCH
Research may be classified, according to the general purpose of the study, as basic or applied research.

Basic research:
1. Is conducted to develop, test and refine theories and generate new knowledge.
2. Some times it is said that basic research seeks(knowledge for <u>knowledge's sake).</u>
3. Immediate application of the results usually does not occur. In fact , years may pass before the social usefulness of the research is determined or acknowledged .
4. The results of basic research often suggest clinical applications.
5. Basic research often uses laboratory animals as subjects.

Applied research
1. Is directed toward generating knowledge that can be <u>used</u> in the <u>near future</u> .
2. It is often conducted <u>to seek solution to existing problem</u>.
3. In nursing, the findings from applied research may pose questions for basic research.
4. the majority of nursing studies have been examples of applied research. Many of these studies have focused on nursing interventions for patients and their families

For example:

in **basic research ,** a researcher may perform an in-depth study to better understand normal grieving processes, without having *explicit* nursing applications in mind.
While Applied research focuses on finding solutions to existing problems. For example, a study to determine the effectiveness of a nursing intervention to ease grieving would be applied research.

There are many roles that nurses can assume in association with research projects:

1- principal (main) investigator
2- member of research team
3- identifier of research problems
4- evaluator of research findings
5- user of research findings
6- patient/client advocate during studies
7- subject/participant in studies

Characteristics of Scientific research :

Traditional scientific research is characterized by several features:

- The researcher uses <u>systematic</u> and <u>objective</u> methods for seeking information.
- The scientific method used <u>empirical</u> data.
- Information is gained in an <u>unbiased</u> manner from aspects of the real world.
- The researcher tries to exercise as much <u>control</u> as possible over the research situation to minimized biased results.
- The researcher's opinions and personal biases should not influence the finding of a study.

Scientific research and Problem- solving approach

There are many similarities between <u>scientific research</u> and the <u>problem- solving approach</u> that is familiar to all nurses.
Both processes involve : identifying a problem area , establishing a plan, collecting data, and evaluating the data.
However The purposes of these two activities are quite different.
Problem solving attempt to seek a solution to a problem that exists for a person or persons in a given setting. while , The purpose of scientific research is much broader. **Scientific research seeks to obtain knowledge that can be generalized to other people and other setting**

Research Hypothesis (الفرضية):

A hypothesis is <u>a prediction</u> about the <u>relationship</u> between two or more <u>variables in the research</u>. It is a requirement for quantitative   but not for qualitative studies

Classification of   hypothesis :

- Hypothesis may be categorized as simple hypothesis <u>and</u> complex hypothesis.
- They may classified into research hypothesis <u>and</u> null hypothesis.
- Research hypothesis may be further calcified into non- directional <u>and</u> directional hypothesis

Simple hypothesis concerns relationship between one independent and one dependent variable. Simple hypothesis might be called bivariate

Complex hypothesis concerns a relationship between two (or more) independent variables and/or two (or more) dependent variables, are being examined in the same study. Complex hypotheses sometimes are referred to as **multivariate hypotheses** because they involve multiple variables.

The null hypothesis: States that <u>no difference</u> exists between groups or that there is <u>no correlation</u> between variables.

The research hypothesis: States that a difference or correlation does exist.   with this type of hypothesis , the reader of research report can determine exactly what the researcher expects to find after analyzing the data.

Non directional and directional research hypotheses:

- In the non directional research hypothesis, the researcher merely predicts that a relationship exist. The direction of the relation is not presented.
- In the directional research hypothesis, the researcher further predict the type of relation ship.

Variables: in research are characteristics of individuals, things and events which vary (may be present or absent in some; with varying levels in individuals). Major variables in research include the Independent Variable, which is the <u>presumed cause</u>, and the Dependent Variable, the <u>presumed effect</u> of the phenomena.

Here are   some examples:
1. Older patients are more at risk of experiencing a fall than younger patients.
2. There is a relationship between the age of a patient and the risk of falling.
3. The older the patient, the greater the risk that she or he will fall.
4. Older patients differ from younger ones with respect to their risk of falling.
5. Younger patients tend to be less at risk of a fall than older patients.
6. The risk of falling increases with the age of the patient.

In all of these examples, the hypotheses indicate the population (patients), the independent variable (patients' age), the dependent variables (risk of falling), and an anticipated relationship between them.

In the six versions of the hypothesis above, versions
1, 3, 5, and 6 are directional because there is an explicit prediction that older patients are at greater risk of falling than younger ones.

as illustrated in versions 2 and 4. These hypotheses state the prediction that a patient's age and the risk of falling are related, but they do not specify whether the researcher thinks that older patients or younger ones are at greater risk.

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