

## How to Conduct a Scientific Research? (Part II)

Elsadig Yousif Mohamed MD

---

### \* Objectives:

Objectives are the goals to be achieved by the research project.

*Why should the Objectives be developed?*

1. Focus the study (Narrow it down to essentials).
2. Avoid collection of unnecessary data.
3. Organize the study in clearly defined parts.

### Types of Objectives:

Objectives are divided into general and specific objectives

**General:** Identifies in general terms what is to be achieved by the research project.

**Specific:** Identifies in details the specific aims of the research project.

*Example:*

*Problem Statement:* Reasons of low utilization of Maternal and Child Health Services in Khartoum State.

*General Objective:* The general Objective is clearly related to the statement of the problem.

e.g. To study the reasons of low utilization of Maternal and Child Health Services in Khartoum State, 2004.

*Specific Objectives:*

- To determine the level of utilization of Maternal and Child Health Services in Khartoum State.
- To identify whether there are variations in utilization of Maternal and Child Health Services by seasons or type of clinics.
- To determine the effect of socioeconomic status on low utilization of Maternal and Child Health Services in terms of mother education, income and occupation.

### Types of Specific Objectives:

1. *Estimation Objectives:* e.g. To determine the incidence rate, prevalence rates etc...
2. *Association Objectives:* Aims at testing an association between a factor of interest and a particular event e.g. To identify whether there is association between low utilization of Maternal and Child Health clinics and mother education.
3. *Evaluation Objectives:* Aims at evaluating the effect of an investigation e.g. The effect of Health Education on utilization of Maternal and Child Health services.

### Characteristics of Specific Objectives: (Objectives should be **SMART**)

*Specific objectives have the following criteria;*

1. Simple, clearly stated and cover all the aspects of the problem.
2. Measurable: For the objectives to be measurable one should use action verbs (e.g. to identify, to compare, to estimate etc...) and avoid the non- action verbs (e.g. to describe, to notice etc...).
3. Attainable: Can be achieved
4. Realistic: Feasible concerning resources (Funds, Materials, Personnel).
5. Timely: To be conducted within a time frame.

Properly formulated specific objectives will help in the following:

1. Selection of the right type of design.
2. Orientation of data collection.
3. Evaluation of the study.

**Hypothesis:**

A hypothesis is a prediction of a relationship between one or more factors and the problem under study, which can be tested.

A hypothesis is a frequent goal in quantitative research .e.g. Consumption of more than 10 cigarettes/day for more than ten years is associated with Carcinoma Bronchus.

**\* Review of the Available Literature:**

After the researcher selects the research topic, he must review the available literature.

*Why do we review Literature?*

1. Prevents duplication and enable comparison.
2. Assistance in refining the statement of the problem.
3. Strengthening the argument of selecting the research topic (Justification).
4. It helps you to get familiar with various types of methodologies that might be used in the study.

**Source of Data and Information:**

- Articles (journals).
- Books.
- Databases.
- Abstracts from journals.
- International organization documents (e.g. WHO, UNICEF).
- Reports from Ministry of Health MOH health facilities.
- Vital statistics such as births, deaths etc...
- Census.
- Surveillance system.
- Surveys.

- Computer search for international Literature (Internet).
- Opinions, beliefs of key persons (Through interview).

*How to use available literature?*

- Use index cards: Researcher should summarize what he finds in a card or an exercise book.
- Researcher should write in his own language.

**Bias in Literature Review:**

Bias is a common problem for which the researcher should take care. The following are the expected bias in literature review:

- The presentation of the available information in such a way that it reflects opinions or conclusions that does not represent the real situation.
- Restricting references to those that support the point of view of the author and neglecting the other views that are different.
- Drawing conclusions from shaky or preliminary results.

**Ethical considerations in literature Review:**

Ethics is an important question when conducting research. Ethical problems in literature review are:

- Bias.
- Careless presentation and interpretation of data can miscommunicate the original ideas of authors.
- Plagiarism which means presenting opinions of authors without referring to them properly inside the text (quotations).