

Lecture 1

Research methodology

Is a science of studying how research is to be carried out? Essentially, the procedures by which researchers go about their work of describing, explaining and predicting phenomena are called research methodology. It is also defined as the study of methods by which knowledge is gained.

Epidemiology: is the study how disease is distributed in population and the factors that influence or determine its distribution

Incidence rate:

Defined as the number of new cases of disease that occurred during specific period of time in population at risk for developing the disease.

Prevalence rate:

Defined as the number of affected person present in the population at a specific time divided by the number of persons in the population at that time .

List of research content:

- **Title page:** The title page should contain the title of the manuscript, your name and contact details. You also need to mention the name of the journal to which the manuscript is being submitted.
- **Abstract:** The abstract generally consists of just a single paragraph. The beginning of the abstract should mention the objective of the experiment and the hypothesis based on which the experiment was conducted. The following sentences should describe how the experiment was conducted and the results obtained. The conclusion of the abstract should explain the implications of these results on the general field of study.
- **Introduction:** The introduction should lay a solid foundation for the rest of the manuscript. The first one or two paragraphs should acquaint the readers with the field of study. The following paragraphs should mention how specific aspects of the field can be improved using the results. The conclusion of the introduction should mention the hypothesis based on

which the experiments were conducted and the methods by which this hypothesis was evaluated.

- **Methods:** This section should contain a proper description of the methods used in the experiment. Each method should be dealt with in a separate section, and an adequate level of detail should be ensured. The beginning of this section should enlist the various materials used in the experiment, and also instructions on how to procure them. The subsequent sections should describe each technique and procedure used to conduct the experiment. The descriptions should be brief and succinct for the benefit of the readers. The methods of statistical analysis used in the experiment should also be mentioned. These steps ensure that readers can effectively replicate this experiment in their institutions if they wish to do so. It is also important that you use standard systems for numbers and nomenclature.
- **Results:** You have to present the experimental data obtained in an organized fashion. Tables and graphs are an effective way of representing your results. You need to introduce each group of tables and figures in a separate paragraph where the overall trends and points of interest are noted.
- **Discussion:** This section is used to interpret the results obtained from the experiment. If the experiments were conducted based on a hypothesis, use the results to determine whether it should be accepted or rejected. You must use the results to elucidate whether the objectives of the experiment have been met or not.
- **Conclusion:** The conclusion should contain a brief and crisp overview of the experiment, the prominent points of discussion, results obtained and the implications these results will have on the field of study.
- **Reference:** You are expected to use a recognized referencing format to cite all your sources of reference. Special care should be taken to include previous works that support the results obtained in the present experiment.
- **Figures and tables:** Tables and figures should be used to explain and supplement the results, not to repeat them. Ensure that the information provided in the tables is not present anywhere else in the manuscript. All the tables and figures should be properly named and labeled such that your readers can understand what the illustrations depict.

Basic steps of writing a scientific research

- Introduction: What did you/others do? Why did you do it?
- Methods: How did you do it?
- Results: What did you find?
- Discussion: What does it all mean?

The main text is followed by the Conclusion, Acknowledgements, References and Supporting Materials.

While this is the published structure, however, we often use a different order when writing.

General Structure of a Research Article

