

## Editorial

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## Research and Its Importance

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Everyone has heard of research, but what exactly comprises research is often misunderstood. This word encompasses a large area of intervention and observation aimed at improving the quality of life of populations.

### WHAT IS RESEARCH?

Research has been defined as a “systematic investigation, including research developments, testing and evaluation, designed to develop or contribute to generalizable knowledge”. It also aims to establish facts and reach new conclusions. The Cambridge English dictionary defines research as a “detailed study of a subject, especially in order to discover (new) information or reach a (new) understanding”. However, research often goes beyond the subject, going from the sub-molecular level to the study of gigantic structures, in order to develop new ideas, confirm or reject old theories and search for hypotheses. The basic tenet of research includes the gathering of data, information and observations to advance our knowledge. The evolution of the human race and technological advancement seen over the last couple of decades is a direct consequence of our increasing interest and dependence on research. While the human race is estimated to be 200,000 years old, most of our progress has occurred in the last 10,000 years. This advancement can be attributed to a better understanding of research methodologies.

### TYPES OF RESEARCH

Medical research can be classified as:

1. Basic (experimental)
2. Clinical
3. Epidemiological

Medical research can also be “primary”, wherein data is gathered; or “secondary”, a process involving review or meta-analysis of the primary data. The primary research is a type of basic research, including experiments on animals or other models; biochemical, genetic, physiological, pharmacological, biotechnological, methodological and other investigations; population based studies or surveys and finally, development or improvement in analytical procedures. These primary studies generate the raw data required to make hypotheses or test-re-test theories.

Clinical research can be either “interventional (or experimental)” or “non-interventional (or observational)”. Interventional studies are also called “clinical trials”. Here, human volunteers (also called participants) are subjected to a rigid standard protocol designed by the investigators.

The clinical trial may compare an untested medical approach with a standard mode of practice, placebo or no intervention. The trial may also be a comparison of 2 arms of interventions already available. The ultimate aim of such research is to determine the safety and efficacy of the intervention.

In an observational study, investigators assess the health outcomes in groups of patients according to the research plan or protocol. The participants continue to receive the standard healthcare practice without assigning to specific interventions. The different outcomes in comparable groups are then analyzed to gain further insight.

Epidemiological studies investigate the distribution and historical changes in the frequency of diseases and the causes for these. Interventional epidemiological studies can be “field studies” (sampling from an area) or “group studies” (samples obtained from a specific group). Observational epidemiological studies can be cohort studies (follow-up studies), case-control studies, cross-sectional studies (prevalence studies) and ecological studies (correlation studies or studies with aggregated data).

#### **IMPORTANCE OF RESEARCH**

Medical research is necessary to increase our knowledge regarding treatment, diagnosis and prevention of diseases or conditions. Research is required in order to fight against diseases, reduce the economic cost of illness, extend life and improve health. Overall, research is aimed at improving the quality of life of the general population and specially the vulnerable groups. It is fundamental in lowering the morbidity and mortality of patients.

#### **CONCLUSION**

Clinicians, non-clinicians and para-medical allied health personnel are in an unenviable position to conduct research. This is a process geared to improve the quality of life of the general population, leading to a healthier gene pool.