

Basics of Medical Research

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Literal meaning of Research as given in Cambridge English Dictionary, it is a detailed study of a subject especially in order to discover new information or new understanding. Research is a systemic approach to discover facts. The fundamental reason why research is done is to find out answers to “when “and “how “ questions. The aim of medical research is to improve health through understanding how the human body works, how do we fall sick and how a disease can be cured and prevented. Research forms the foundation of improved medical care.

Health research has different dimensions:

- Theoretical research and applied research.
- Preventive and therapeutic research.
- Bench based research and bedside research.
- Exploratory research and confirmatory research.
- Implementation research and transitional research.

Steps in Medical research

We all are well conversant with the fact that science is a systematic study of facts which follows a set pattern. Thus, any scientific research must follow a step by step methodological approach, which encourages clarity and avoids multiplicity. Medical research aims at finding answers or practical solutions at individual and community level.

Jenicek (2006) has provided a layout of modern argument in medical research. This involves processes that go on from what is in your mind to searching external evidence

for or against, making a qualified claim, then conducting leading to the results with limitations such as probability [1].

The whole research can be divided into steps:

1.Pre-investigation step:

This step is the vital step for any research, following are the important aspects to be followed

Identify problem:The first step is to pinpoint the problem on which the research work has to be done. There are 3 important areas which are to be matched with research problem (a) relevance and applicability, (b) interest of research team, (c) feasibility. The problem should be converted to a research question. A good research question has a strong theoretical back up.

Evaluate existing information: Collect all the available information on the chosen subject by searching literature, unpublished research, and communicating with experts.

Formulate research objectives: Consider whether you expect to come up with entirely novel findings or just confirm previous work that left some doubt, or would address the present conflict (Brand 2003) [2].

Identify the study population.

Study Design: Observational or interventional. Randomisation is a vital step of interventional studies. Blinding and matching should be performed carefully

2. Investigation Step:

Pilot study: This will help in identifying any shortcomings in formulating research objectives or in the design or tools for study.

Data collection: The backbone of research is the data and thus the data collection step is of utmost importance, it could be prospective in form of interview, record filling and questionnaires. Retrospective study requires careful retrieval of medical records.

Scrutiny of Data: Data cleaning or scrutiny helps in maintaining external validity and internal consistency.

3. Post Investigation step:

Following are some of the important post investigation steps;

Data analysis:Analysing the collected data is the most important and meticulous step in

any research. It itself has got different steps which will cumulatively help in arriving on the answer to research question.

Interpretation of Results: after analysing the data,statistically the results are to be interpreted using critical thnking and in context of objectives of study.

Manuscript writing: It could be in the form of thesis, project report, an article or dissertation.

Outcome of Medical research:A meticulously planned and executed research bears fruits of accomplishment for researcher and improvement in terms of care provided at individual and community level.

Reference

1. Jenicek M. How to read, understand and write 'Discussion' sections in medical articles:an exercise in critical thinking. Med Sci Monit 2006; 12:SR28-SR36.
2. Brand RA Writing for Clinical Orthopedics and Related Research. Clin Orthop Rel Res2003; 413:1-7