Brief Handouts

RESEARCH AND SURVEY METHODOLOGY

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RESEARCH:

- Research is application of scientific method to understanding of some natural or social phenomenon with the view to finding solution to some problem.
- It is a systematic quest for undiagnosed truth.

Research is the systematic collection, analysis and interpretation of data to answer a certain question or solve a problem.

TYPES OF HEALTH RESEARCH

Research has different types which depend on why is research done or how the research done. The most common types are qualitative and quantitative research model. These two types are most common division in social research.

- **Based on Type of observations:**

1. **Qualitative research:**

Qualitative research applies to non-quantitative methods and techniques in collecting and analyzing data. It is non-numerical. It uses words. The purpose is to get the picture, the meaning, the feeling. It tries to get and describe the situation which is experienced by the despondences. It uses theories and methods of school such as phenomenology or intellectualism.

2. **Quantitative research:**

Quantitative research is based on positivism. It uses positivistic methodology and principles. It is set by the researcher at the beginning of the research work. It is a numerical method. It uses numbers. It applies statistics. It uses figures.

- **Other Types of research:**

a) Basic Research: The purpose of conducting this research is to get knowledge about the social world. We want to make decision about existing theory, new theory, and social phenomena. This leads researcher to find the new knowledge. It is necessary to generate new knowledge and technologies to deal with major unresolved health problems.

b) Applied Research: Applied research is done on social and policy matters for the purpose of solving specific problems or to establish policy program. This study includes impact study, cost benefit analysis. Is necessary to identify priority problems and to design and evaluate policies and programs that will deliver the greatest health benefit, making optimal use of available resources.

f) Exploratory Research: This is done to get more information about the research subject. It can help you to establish your subject. You can formulate hypothesis. You can get more information on subject.

g) Comparative Research: Comparative research is aimed at drawing some similarities and differences between units. You can compare different events, different faces, different units, different people, different situation to see or not the behavior are the same?

RESEARCH ETHICS

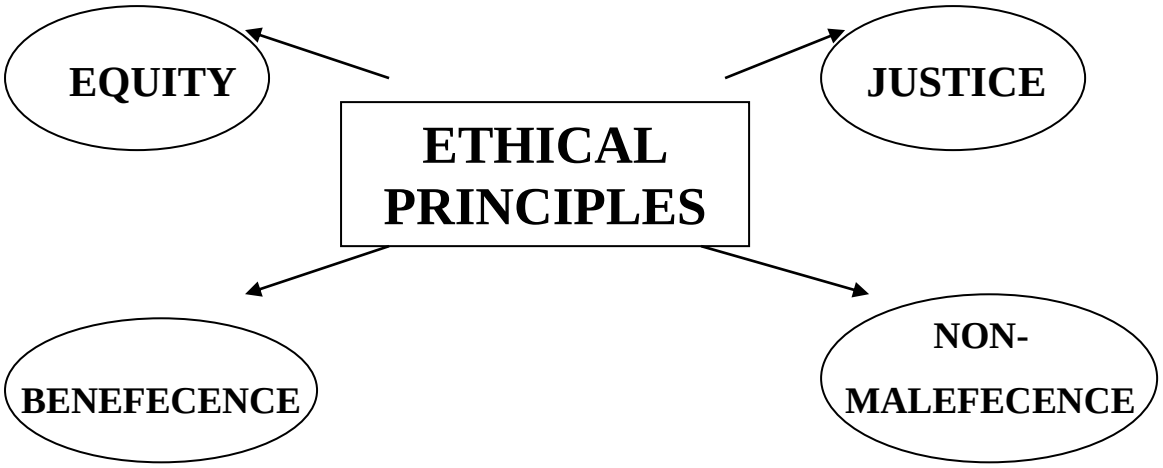
Social research is guided by ethics which must be observed by a researcher. These ethics include:

a) Confidentiality: That means the information collection cannot be released to people who are not concerned with the study. The data must be handled in a manner which is confidential. For example; the medical doctors they do not reveal illness of their patients to an unauthorized person. They keep it confidential to themselves. The principle of humanity requires the research not to reveal the identity of the respondent. The person who provides information his/her identity is not released.

b) The researcher must produce the report **without concealing/ hiding the data**.

c) Informed consent should be taken

d) Privacy (Both physical and verbal) should be maintained



RESEARCH PROCESS:

1. Identification of Problem:

- ***Finding a problem*** is not very hard but ***identifying*** one for the purpose of research is not always easy.
- One of the most important tasks of research is to ***identify and define clearly*** the problem you wish to study.
- Problem definition is ***most critical*** to the success of the study.

Problem:

- A problem is a perceived difficulty,
- A feeling of discomfort with the way things are,
- A discrepancy between what someone believes ***should be*** and ***what is***.
- Problems are initiating force behind research, not all problems require research.

A potential research situation arises when three situations exist:

I. A perceived ***discrepancy*** between what is and what should be

II. A ***question*** about why the discrepancy exists

III. At least ***two possible and plausible answers*** to the question.

2. Priority Ratings For Research Topics:

Proposed Topic	**CRITERIA FOR SELECTION**							
	Relevance	***Duplication***	***Feasibility***	***Political Acceptability***	***Applicability***	***Cost Effectiveness***	***Ethics***	***TOTAL SCORE***

Relevance:		**Feasibility:**		**Cost effectiveness:**	
Irrelevant	01	Not feasible	01	Not cost effective	01
Relevant	02	Feasible	02	Cost effective	02
Very relevant	03	Very feasible	03	Very cost effective	03
Duplication:		**Political acceptability:**		**Ethics:**	
Duplication	01	Not acceptable	01	Major ethical issues	01
Some duplication	02	Acceptable	02	Minor ethical issues	02
No duplication	03	Very Acceptable	03	No ethical issues	03
		Applicability:			
		Not applicable	01		
		Some applicability	02		
		Very applicable	03		

3. Definition of Problem:

The research problem identified must be ***defined in terms of its***

a. Occurrence
b. Intensity
c. Distribution and
d. other measure for which data are already available.

You may guess as to why the problem exists, but they are often wrong and do not provide a firm basis for designing a research study.

A far better way to define a problem situation is to ***review relevant literature***, examine current services, statistics, seek educated opinion from persons concerned, or health theory.

A careful review will help the researcher determine, specify and describe the core problem.

- ***Incidence & Prevalence:***

  How wide the problem is?

  What is its distribution?

  How often does it occur?

  Who is affected?

- ***Geographic Area affected:***

  Whether it affects rural or urban areas?

- ***Characteristics of Population Group:***

  Age, sex etc.

  Who is affected?

- ***Analyze the problem: (ANALYSIS DIAGRAM- handout)***

  Identify the factors contributing to the problem.

  Clarify the relationship between problem & contributing factors

- ***Probable Reason for the problem:***

A review of information on a problem should suggest a number of probable reasons why a problem exists.

What is the current thinking about the reasons for the problem?

- ***Possible solutions:***

  Many projects and programs may have been directed at the problem in an attempt to overcome it.

  What types of solutions have been tried in the past?

4. Justification of Problem: Important points to be answered

- Usefulness of the information
- Does your problem currently exists?
- How wide spread it is?
- Problem effects which groups?
- Who else is concerned about the problem?
- Is it feasible to study the problem? (time & monetary constraints)

5. Problem Statement: (information to be included)

- Brief description of the background
- Concise description of the nature of the problem
- An analysis of the major factors
- A brief description of any solution
- A description of the type of information expected to result from the project
- Use of this information

6. Literature Search:

- Developing an ability to search in a *purposeful* and *systematic* manner through the range of literature or information *relevant* to your particular field.

Web based Searching:

- MEDLINE became operational in 1971. It is a computer database corresponding to the US National Library of Medicine's printed index of journal literature, *Index Medicus*. Information available on MEDLINE can be accessed either by CD-ROM or by on-line retrieval methods
- PubMed is a World Wide Web (WWW) retrieval service developed by the National Centre for Biotechnology Information (NCBI) at the National library of Medicine (NLM).

PubMed: How to use it

- PubMed is derived from two words, Publications, and Medical
- It is a project of the National Institute of Health, National Library of Medicine
- Available on the internet, as of 02-Jun-99, there were 372 journals on this list.
- It searches for you from about 9,000,000 papers

- For more details of PubMed, you may visit

  http://www.ncbi.nlm.nih.gov/PubMed/

Boolean search:

- Sometimes a single word, put as a search string does not work out, and searching it either gives too many results, like we saw in case of "diabetes" , or, too few results as we might encounter with a very rare condition, a new surgical procedure, a recent drug introduced, or a similar limiting situation.
- Then we use what is called Boolean logic.
- Boolean logic uses three terms
- AND, OR, NOT
- While the computer reads them in its own mathematical way, these words have simple meanings.
- **AND** The search engine will look for all the words connected thorough AND
- So in our previous example, "diabetes" AND "hypertension", would bring only those articles which necessarily have both the words "diabetes" and "hypertension"
- In PubMed search, if you do not use any Boolean logic word between the words, it automatically adds AND to them.
- Therefore, as we saw in our example, all the articles selected in the second step had both the words.
- AND is therefore used to limit the number of search articles to lesser.
- **OR** The search engine will look for all the words connected by this term "OR"
- As a result, all the articles that have any of the words in the search string will be selected

- Taking the example of "diabetes" and "hypertension" all the articles that have any of the two words will be selected.
- OR is therefore used to broaden the search results
- **NOT** The search engine will look for all the words connected by this term "NOT"
- As a result, all the articles which have the word written before it, but NOT the words in the search string written after it!
- NOT is also used to narrow the search results, however it need to be used carefully.
- Always put these Boolean logic terms in CAPITALS, leave a space for gap between these words and search string, and be careful if you use more than one of them in one search.

Phrase searching technique

- Sometimes two word in a phrase are not needed to be considered as separate words. They might well be a single term in the end.
- While PubMed search engine intelligently does the same, phrase searching technique might help.
- It uses inverted commas applied on the phrase.

INFORMATION SOURCES	DATABASE SEARCH	HAND SEARCH	
		INDEXES	INFORMATION SOURCES
Journal article	MEDLINE & CANCERLIT or EMBASE (Internet)	Index Medicus Excerpta Medica	Key journal issue Reference lists of articles
Current journal articles	Current Contents or PREMEDLINE PUBMED	Current Contents/Clinical Medicine	Current journal articles
Research projects	PDQ (Physician Data Query file-ongoing trials)	Pakistan Government Research Documents	PMRC directory of research
Conference, congress, & meeting proceedings	Conference papers Index Directory of published proceedings (CPSP)	Conference Papers Index Directory of published proceedings	Program/proceedings of various societies (PPA, etc)
Researchers & research organizations	Research Centers and Services Directories	Research Centers Directory	First authors of relevant articles

7. Formulation of Objectives:

Research Objective:

The objectives of a research project summarize what is to be achieved by the study.

General Objective: of a study states what is expected to be achieved by the study in general terms.

Specific Objectives:

- It is possible to break down a general objective into smaller, logically connected parts.
- Sp.Obj. should systematically address the various aspects of the problem as defined under the statement of the problem.
- Also the key factors that are assumed to influence or cause the problem.
- They should specify what you will do in your study, where and for what purpose?
- An objective focusing on how the results will be utilized/ used should be included in every applied research study.

Why should research objectives be developed?

- Focus the study
- Avoid collection of data that are not strictly necessary for understanding and solving the problem you have identified
- Organize the study in clearly defined parts or phases
- Properly formulated Sp.obj. will facilitate the development of your *Research Methodology* and will help to orient the *collection, analysis, interpretation and utilization* of data.

How to state Objectives:

Take care that the Objectives of your study:

- cover the different aspects of the problem and its contributing factors in a coherent way and in a logical sequence;
- Are clearly phrased in operational terms, specifying exactly what you are going to do, where and for what purpose;
- Are realistic considering local conditions; and
- Use action Verbs that are specific enough to be evaluated.

(e.g. to determine, to compare, to evaluate, to verify, to describe, to establish)

Important to remember:

- When the project is evaluated, the results will be compared to the objectives. If the objectives have not been spelled out clearly, the project cannot be evaluated.
- Objectives should be SMART; S- specific, M- measurable, A- action oriented, R- reliable,T- time based.

Check List for Objective formulation:

- Do the Objectives deal with all aspects of the research problem in a logical and coherent way?
- Are the objectives clearly phrased?
- Are the objectives defined in operational terms that can be measured? Realistic?
- Do they indicate where the study will be conducted?

Do they indicate the development of recommendations for how the research results will be used to solve the problem?

➢ Formulation of Hypothesis:

- Based on your experience with the study problem you can formulate explanations for the problem
- If so you can formulate hypothesis
- A Hypothesis is a prediction of a relationship between one or more factors and the problem under study, which can be tested

NULL Hypothesis: is usually the statement that there is no difference between groups or that one factor is not dependent on another. OR the observed difference is due to chance alone. It is represented by Ho.

Alternate Hypothesis: states that there is a significance difference between two groups OR one factor is dependent on another. It is represented by Ha.

➢ Title of study:

Now you can finalize your title

- Title should be in line with your general objective.
- Be sure that it is specific enough to tell the reader what your study is about

➢ Variable:

In problem analysis we analyse the problem and all the factors that might influence it in form of a diagram. This served as the basis of formulation of objectives of the study. Now there is a question to be asked to ourselves; **"What information are we going to collect in our study to meet our objectives?"**

- We need to ***describe the problem*** more precisely.

EXAMPLE: In a study to investigate why so many tuberculosis patients default from out-patient treatment, we first want to know how high the defaulter rate is; is it 10%, 30%, 50%?

To obtain the defaulter rate we need a clear definition of what we mean by defaulting (how many times treatment was missed).

- We also want to know whether certain factors indeed influence the problem, and ***to what extent.***

EXAMPLE: If we find that becoming a TB treatment defaulter is strongly associated with:

a. Lack of knowledge concerning the actual duration of treatment and the danger of relapse or death when the full course is not completed.

b. Living more than 8 km away from the clinic where the drugs have to be obtained each month:

c. and being between 15 to 30 years of age.

So it is essential that the problem itself, as well as each of the factors we identified when analyzing the problem is carefully defined. To do this we must select variables.

What is a variable?

A variable is a characteristic of a person, object, or phenomenon that can take on different values.

Numerical Variables:

EXAMPLE: A simple example is person's **age**. This can take different values because a person can be 20 years old, 35 yrs old and so on.

Weight (expressed in KG or lb)

Distance between homes and clinic (expressed in Km or in minutes walking distance).

Monthly income (expressed in Dollars, rupees etc).

Because the values are expressed in numbers in these examples we call it as Numerical Variables.

Categorical Variables:

The different values of a variable may also be expressed in categories.

EXAMPLE: **Sex** has two values, male and female, which are distinct categories.

Colour --- Red, blue, green etc.

Outcome of Disease --- Recovery, chronic illness, death

Main types of staple food eaten --- maize, rice, wheat etc.

Since the values of these variables are expressed in categories they are called Categorical Variables.

Factors rephrased as variables:

Look at your analysis diagram, most of what we called factors are in fact variables. Which have negative values. As we conduct our study we need to determine to what extent these variables play a role, so we have to formulate variables in a neutral way. (so that they can take negative as well as positive values)

EXAMPLE:

Factors as presented in analysis diagram	Variables
• Long waiting time • Absence of drugs • Lack of supervision • Poor knowledge of signs, causes and consequences of TB	• Waiting time • Availability of Drugs • Frequency of Supervisory visits • Knowledge of signs, causes and consequences of TB

Operationalzing variables by choosing appropriate indicators:

Operationalizing the variables means making them measurable. For some variables it is not possible to find meaningful categories unless the variables are made operational with one or more precise indicators.

EXAMPLE-1: You want to determine the level of knowledge concerning a specific issue. This will help you in determining to what extent the factor "poor knowledge" influences the problem under study e.g Low utilization of prenatal care by pregnant women.

The variable "Level of Knowledge " cannot be measured as such. You must develop a series of questions to assess a person's knowledge, for example on prenatal diagnosis and risk factors related to pregnancy. The answers to these questions form an indicator of the person's knowledge on this issue that can now be categorized. If 10 questions were asked you may decide that the knowledge of those with:

0 to 3 correct answers is poor,

4 to 6 correct answers is reasonable and

7 to 10 correct answers is good.

EXAMPLE-2: Nutritional status of under 5 years old is another example of a variable that cannot be measured directly. Widely used indicators for nutritional status assessment include;

Weight in relation to age

Weight in relation to height

Height in relation to age and

Upper-arm circumference.

For classification of nutritional status standard growth curves already exists. For the indicator Weight for age;

Well nourished if they are above 80% of the standard

Moderately malnourished if they are between 60% and 80% and

Severely malnourished if they are below 60%

When defining variables on the basis of the problem analysis diagram, it is important to realize which variables are measurable as such and which ones need indicators. Once appropriate indicators have been identified, we know exactly what information we are looking for. This makes the collection of data as well as the analysis more focused and efficient.

Defining variables and indicators of variables: To ensure that;

- everyone (the researchers, the data collectors and eventually the reader of the research report) understands exactly what has been measured
- there will be consistency in the measurements,

it is necessary to clearly define variables & indicators of variables.

EXAMPLE: "Waiting Time" to define it it is necessary to decide what will be considered the starting point of the waiting period. e.g is it when the patient enters the front door, or when he or she has been registered and obtained a card?

For certain variables it may not be possible to define adequately the variable or the indicator immediately because further information may be needed for this purpose.

- You may need to review literature to find out what definitions have been used by other researchers, so that you can standardize your definitions and thus be able to easily compare your finding with those of other studies.
- In some cases opinion of experts may be needed.
- In such cases you made need to identify and state the method that will be used to develop the definitions of the variables or indicators.

Dependent & Independent Variables:

In Health Systems research you often look for causal explanations. It is important to make a distinction between dependent and independent variables.

Dependent Variable:

The variable that is used to describe or measure the problem under study is called the dependent variable.

Independent Variable:

The variables that are used to describe or measure the factors that are assumed to cause or at least to influence the problem are called Independent variables.

EXAMPLE: In a study of the relationship Between smoking and lung cancer, "suffering from lung cancer" (with the values Yes or No) would be the dependent variable and "smoking" (varying from not smoking to smoking more than three packets a day) the independent variable.

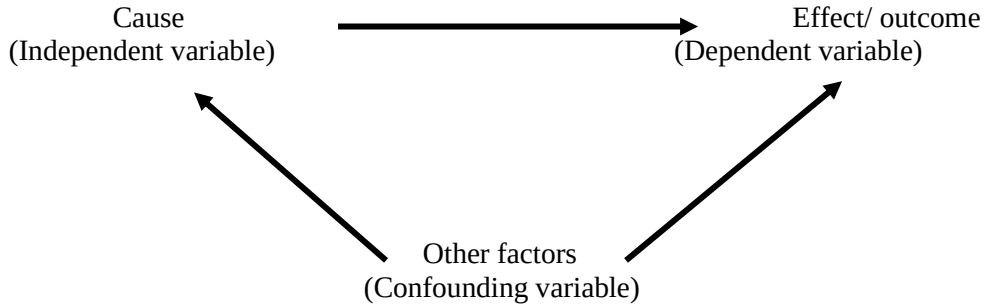
Whether a variable is dependent or independent is determined by the statement of the problem and the objectives of the study. So when designing the study it must be clearly stated which variable is dependent and which is independent.

In every language we speak of causes of problems but in scientific way we say associations between variables, unless a causal relationship can be proved. If we find association between lung cancer and smoking we say smoking is the cause of lung cancer only if we can both demonstrate that cancer was developed after the habit of smoking. And that there were no other factors that may have caused both the cancer and the habit of smoking. EXAMPLE: Nervous people both smoke more and develop more cancer than persons who are not nervous.

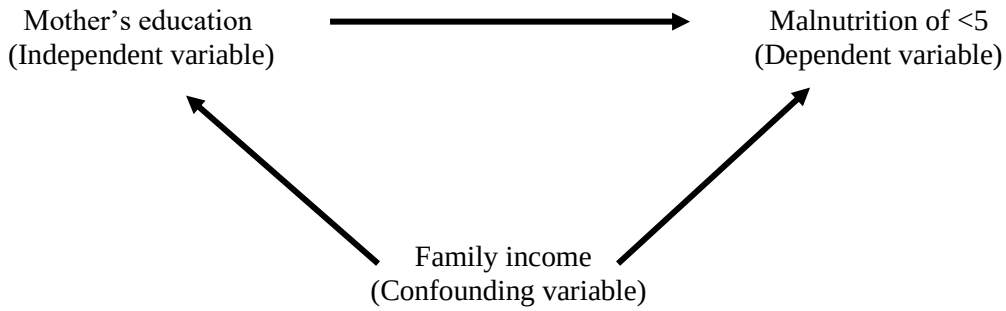
Confounding Variable:

A variable that is associated with the problem and with a possible cause of the problem is a potential confounding variable.

A confounding variable may either strengthen or weaken the apparent relationship between the problem and a possible cause.



EXAMPLE:



Family income in this example is potential confounding variable. To give a true picture of this relationship between mother's education and malnutrition, family income should also be considered and measured. This could either be incorporated into the study design, e.g by selecting only mothers with specific level of family income, or it can be taken into account in the analysis of the findings, with mother's education and malnutrition among their children being analyses for families with different categories of income.

Quantitative Study Designs (Epidemiological Methods)

1. OBSERVATIONAL STUDIES:

- ☐ Descriptive Studies ……. Case reports, case series, cross-sectional, ecological studies
- ☐ Analytic Studies
  - ■ Comparative Cross Sectional or cross-sectional analytical studies
  - ■ Case Control studies
  - ■ Cohort studies

2. INTERVENTIONAL STUDIES:

A. Randomized Controlled Trials

B. Non-randomized trials

KEY CONCEPTS in STUDY DESIGN

- Study designs in medicine fall into two categories: studies in which subjects are observed and studies in which the effect of an intervention is observed.
- Observational studies may be forward-looking (cohort), backward-looking (case-control), or looking at simultaneous events (cross-sectional). Cohort studies generally provide stronger evidence than the other two designs.
- Studies that examine patient outcomes are increasingly published in the literature; they focus on specific topics, such as resource mobilization, functional status, quality of life, patient satisfaction, and cost-effectiveness.
- Studies with intervention are called experiments or clinical trials. They provide stronger evidence than observational studies.
- The single best way to minimize bias is to randomly select subjects in observational studies or randomly assign subjects to different treatment arms in clinical trials.

- Bias occurs when the way a study is designed or carried out causes an error in the results and conclusions. Bias can be due to the manner in which subjects are selected or data are collected and analyzed.
- Clinical trials without controls (subjects who do not receive the intervention) are difficult to interpret and do not provide strong evidence.
- Each study design has specific advantages and disadvantages.

Observational Studies:

- When Epidemiologist observes the relationship between exposure & disease outcomes in free-living population it is called Observational Studies.
- Nature is allowed to take its course and no intervention.

Experimental Studies:

- When epidemiologist or clinician test interventions aimed at *minimizing the disease-producing exposures* & *optimizing health-promoting exposures or factors* they are performing Experimental studies.
- An intervention is done and results of the study assess the effects of intervention.

1. OBSERVATIONAL STUDIES:

A. Descriptive:

- **Case-report:**
    - Case report is brief, objective report of a clinical characteristic or outcome from single subject or event.
    - n = 1
    - e.g. 23 yr old man with MDRTB, no control group.
- **Case-series:**

When certain characteristics of a group (or series) of patients (or cases) are described in a published report, the result is called a case-series study: it is the simplest design in which the author describes some interesting or intriguing observations that occurred for a small number of patients.

Case-series studies frequently leads to the generation of hypothesis that are subsequently investigated in a case-control, cross-sectional, or cohort study. These three types of studies are defined by the period of time the study covers and by the direction or focus of the research question.

- Case series is an objective report of a clinical characteristic or outcome from group of clinical subject or event.

- n > 1
- e.g. Patients at local hospital with MDRTB, no control group.
- Usually generates hypothesis

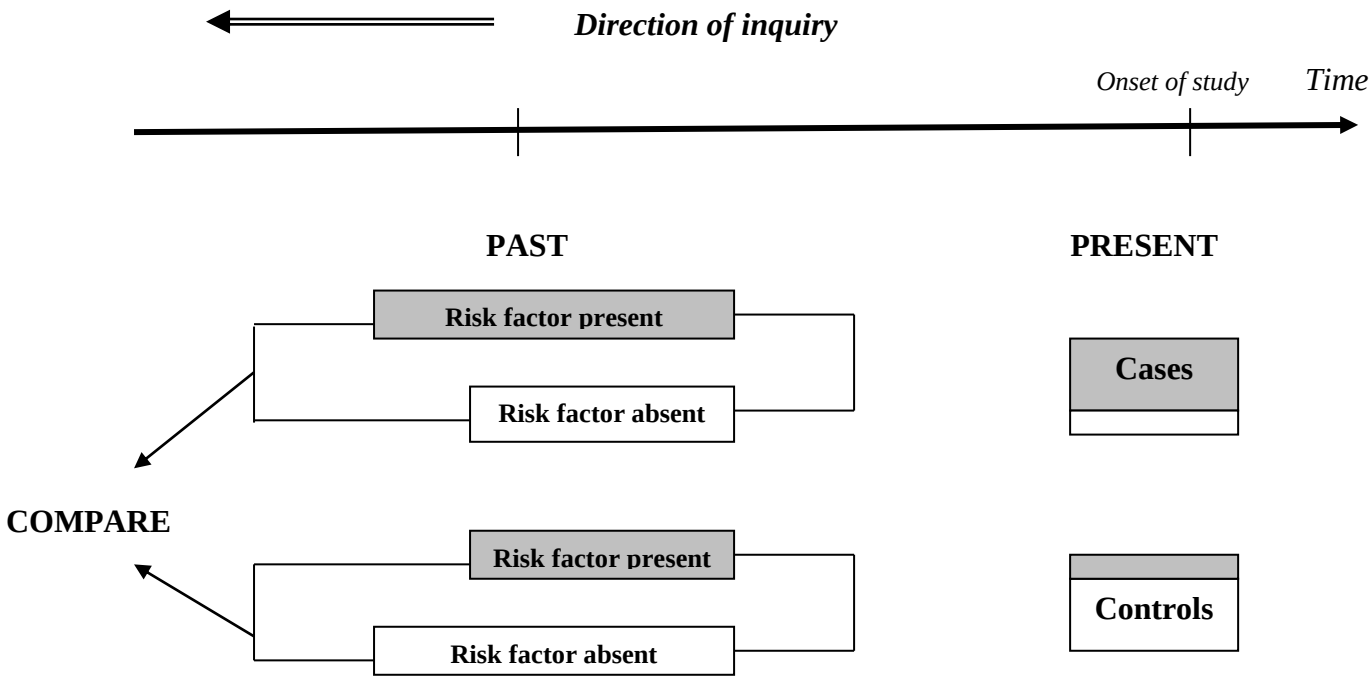
B. <u>Case-control studies</u>

A case Control study identifies a group of people with the disease and compares them with a suitable comparison group without the disease. It is almost always retrospective. e.g. Comparing cases of MDRTB with cases of non MDRTB.

1. Causes and incidence of disease are identified but prevalence cannot.
2. Identification of risk factors
3. can help determine causal relationships
4. Very useful for studying conditions with very low incidence or prevalence. (rare)

Question: ***"What happened?"***

Diagram: *(Retrospective study, looking backward)*



C. **<u>Cross-sectional studies, surveys (prevalence)</u>**

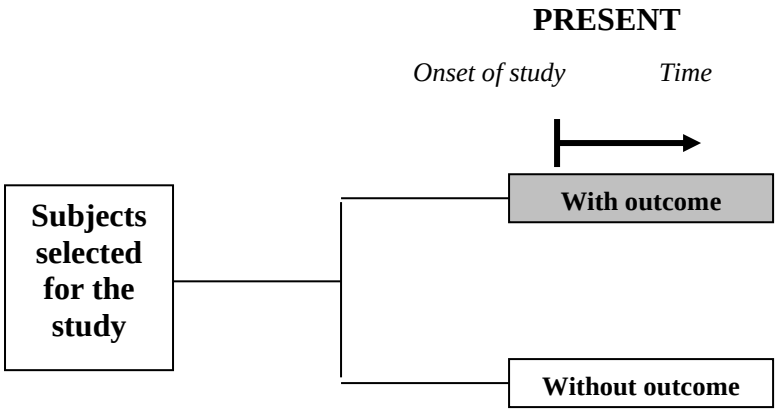
Presence or absence of disease & other variables are determined in each member of the study population or in a representative sample at a particular time. The co-occurrence of a variable & the disease can be examined.

1. Disease description
2. Diagnosis and staging
3. Disease processes and mechanisms
4. Disease prevalence rather than incidence is recorded

5. The temporal sequence of cause & effect cannot be determined in a cross-sectional study.

e.g. who in the community now has MDRTB.

Question: ***"What is happening?"*** ***No direction of Inquiry***



D. **Cohort studies (prospective)**

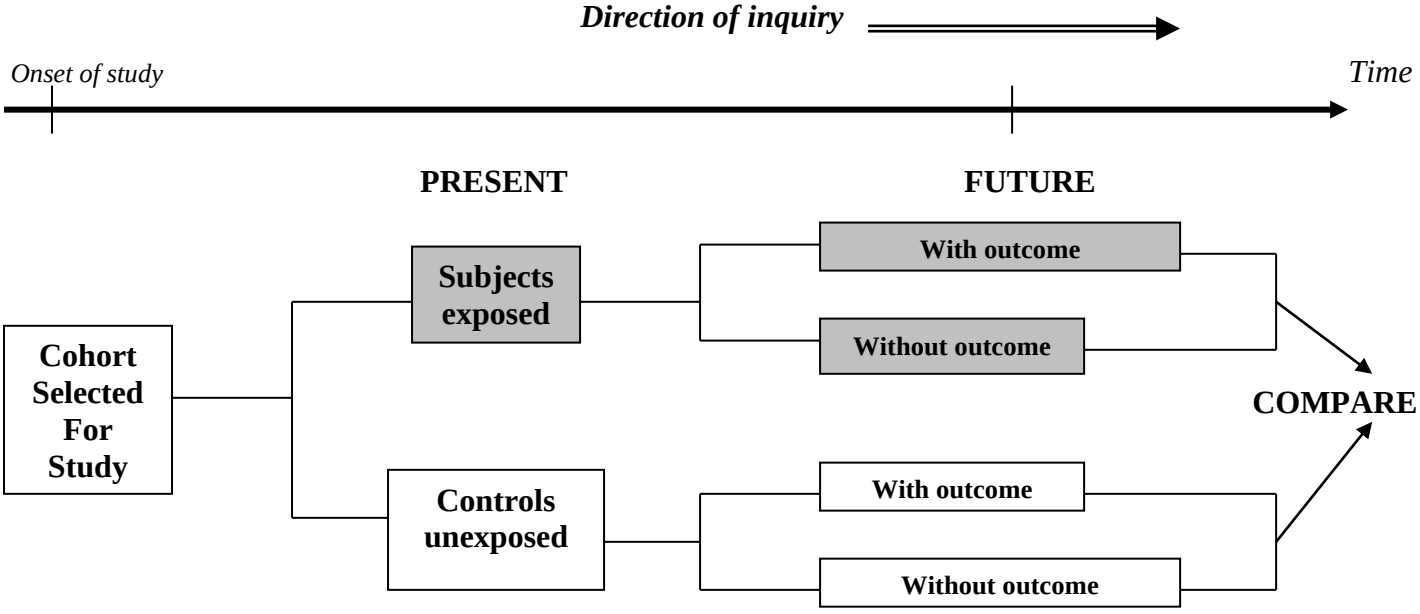
Basic Principle: Population group is identified who has been exposed to risk factor and is followed over time and compared with a group not exposed to the risk factor. Outcome is disease incidence in each group.

e.g. following a prison inmate population and marking the development of MDRTB.

1. Causes and incidence of disease
2. Identification of risk factors
3. Natural history , prognosis
4. prospective, subjects followed forward in time
5. can determine causal relationship
6. Must follow population long enough for incidence to appear.

Question: ***"What will happen?"***

Diagram: *(Prospective study, looking forward)*



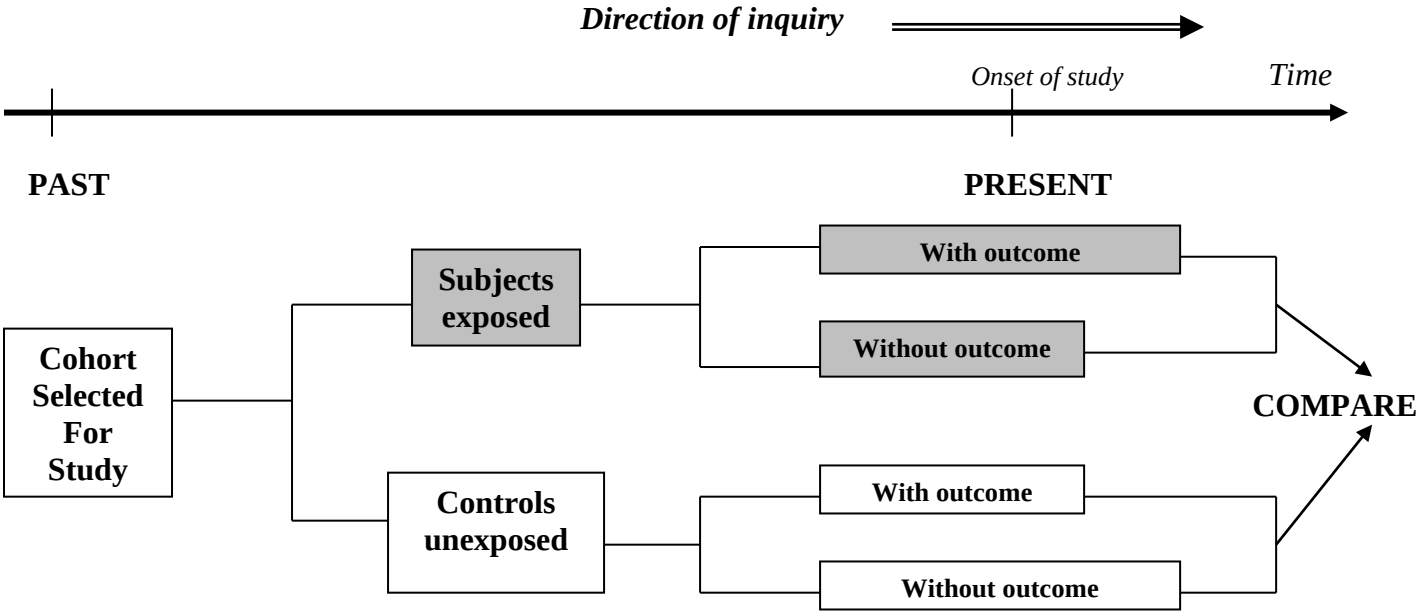
E. **Historical Cohort Studies (retrospective)**

All the above statements are same for this type of study but one can undertake a cohort study by using information collected in the past and kept in records or files.

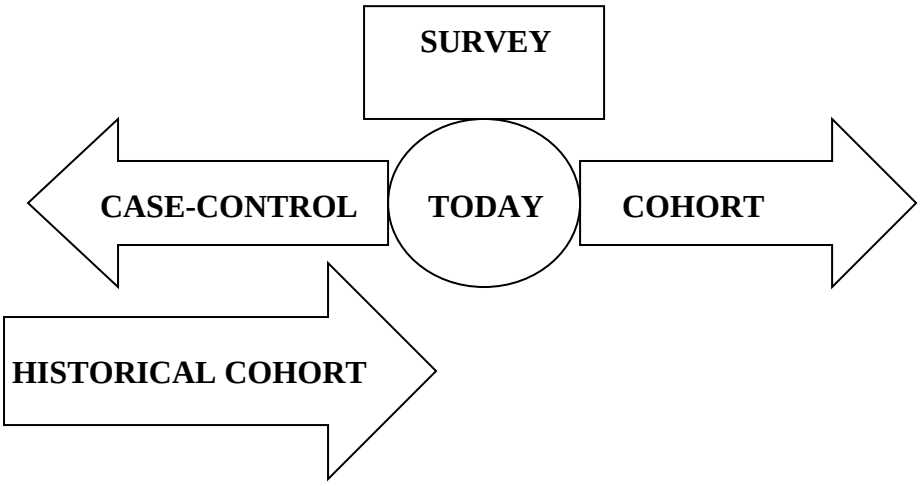
1. This approach to a study is possible when records on follow-ups are complete and adequately detailed.
2. If the investigator can ascertain the current status of the patients.
3. Direction of inquiry is still forward in time, from a possible cause or risk factor to an outcome.

e.g. To study outcome of MDRTB patients treated in 2003 and followed in future up to the present time 2006, information collected from complete follow-up records.

Diagram:



Schematic diagram of the time relationship among different observational study designs. The arrows represent the direction of inquiry.



Experimental Studies/ Interventional Studies:

- In intervention studies, the researcher manipulates a situation and measures the effects of the manipulation. Usually (but not always) two groups are compared, one in which the intervention takes place (e.g.. treatment with a certain drug) and another group that remains "untouched" (e.g., treatment with a placebo) .
- Experimental design is the only type of study design that can actually prove causation.
- In an EXPERIMENTAL STUDY, individuals are randomly allocated to at least two groups. One group is subjected to an intervention or experiment, while the other group(s) is not.
- The outcome of the intervention (effect of the intervention on the dependent variable/problem) is obtained by comparing the two groups**.**

1. The True/ classical experimental study design; has three characteristics:

- Manipulation
- Control
- Randomization

2. Quasi Experimental Studies:

- In a QUASI-EXPERIMENTAL STUDY, at least one characteristic of a true experiment is missing.
- One of the most common quasi-experimental designs uses two (or more) groups, one of, which serves a control group in which no intervention takes place.
- Both groups are observed before as well as after the intervention, to test if the intervention has made any difference.

SURVEY METHOD

A social survey is a method of obtaining large amount of data usually statistical data from a large number of people in short time. This method gives explanatory and descriptive picture of social phenomena. Social survey is conducted in stages;

1- Choose the topic of study:

The researcher must make a decision of what researcher must make a decision of what? What problem do you want to study? Can they read and write? Do they know your language?

2- Reviewing literature:

The researcher must spend time what other people have written about the problem or the topic which is being studied. This stage involves systematic search in the library in order to get some idea about the research design, about key issues and about method of data collection. The library research will also help you to identify problems in the research proposal. It will also help to avoid repeating mistakes committed by earlier researches. Library is an important process in increasing your knowledge on the ground that the current study is related or it builds in previous work.

3- Forming hunches and hypothesis:

Hunch is something you are thinking that the thing is that you don't know. At this stage the researcher forms some opinion or makes some idea about the problem of study.

At more advanced stage the researcher formulates hypothesis to be tested. A hypothesis is an informed guess about the research problem. The informed guess or hypothesis is formulated and is based on previous research and observation.

4- Identification of the population to be surveyed.

5- Carrying out preparatory investigations and interviews:

This is done if the researcher is not very clear about the circumstances surrounding the study.

6- Drafting the questionnaire or the interview schedule:

You must have the actual question that will be asked during the survey or is an interview you must have the questions or the schedule to be followed during the interview.

The questionnaire is the list of the questions to be asked by a researcher. How questions are:

a) You ask the same question in the same way to all people.

b) The questionnaire may be distributed or mailed or posted or can be put in newspaper.

c) The questionnaire will be filled by respondent under you supervision one stage after another.

d) An interview is guided by interview schedule is the list of questions which will be used by the researcher to collect data.

e) If the researcher will use the same question to everybody that interview will be structured and formal.

f) If the interview involves talking is an unstructured an informal way.

g) Interviewing is always administered face to face.

h) It may be like the questionnaires are asked in the same question and same way this is called standardized interview.

Standardized interview is the questionnaire that same questions are asked in the same way. If the form of question and order of interview is left to the interviewer that interview is unstructured. If it is opposite it is structured.

7- Structured interview:

Structured interviews are used in objectivity of research and structured questionnaires are used in statistics data.

8- Conducting pilot survey:

In this stage the researcher tries to questionnaire with the few selected people who are similar to both who will be studied. Pilot surveys help the researcher to know the questionnaire is clear or not.

9- Finalize the questionnaire:

You provide few questionnaires to the people to be studied.

10- Selecting sample population:

All people who will be surveyed in the study. Sample size means how many people will be surveyed. It shouldn't be too small. It should be reasonable. It depends on resources, kinds of research, sampling done by either probability or non-probability.

SELECTING AND TRAINING INTERVIEWER:

If the sample size is very large many people will interview, the research will need an assistance to help him. This will depend on qualification of the respondent. The researcher must train the researcher assistant the purpose of training is to make sure that all interview are conducted in a similar way, training will help to reduce interview effect.

COLLECTING DATA:

Usually interview questionnaires are administer in surveys the question will be posted or mailed to respondent. To mail or post questionnaire is cheaper than presenting them. However posting is not guarantying that will be received in addition the respondent may find difficult to answer the questionnaire because of time, people don't go to the post office. Therefore you can suffer from poor response rate; you loose representative ness of the sample.

Person to person interview is costly it needs more time; it needs many people to assist interviewing. It can need traveling and money. It is sure that you will get the response of your question. Problem of confidentiality can be obstacle. Confidential refers to the assurance the information will not reveal to the person concerning the study. The problem of anonymity refers to holding back to the identity of the respondent. Anonymity can be maintained by not allowing the respondent to give the names of the researcher.

PROCESSING THE DATA AND ANALYZING RESULT:

After collecting interview or administering questionnaire the researcher will work on data collected, this will involve working out categories of information collected. Putting into groups of data collected. You find the total and eventually analysis the data if it is quantitative research you will produce the story. Eventually you will publish the report. You have to publish in the article of the journal or other means of disseminating your report of the seminar/meeting.

Advantages of survey method:

1- The vast number of people can be studied.
2- The method is relative, cheaper.
3- If the survey is collected well the result can be reliable, valid and representative.
4- If the survey is proper conducted the influence of the researcher is minimized.
5- Survey can produce data which can be expressed in statistical form.

Disadvantages of survey method:

1- Interview can lead in artificial, in the sense that what people will tell you may not be exactly what they do.
2- Interview effect. The respondent can change behaviour because they want something to earn.
3- The questionnaire or interviewing schedule can mean you are certain limit of what respondent says.
4- It is likely anyone will give full of true answers, sensitive issues, embraced issues, criminal aspects of their life.

DATABASES FOR LITERATURE SEARCH

Google Scholar Search (www.scholar.google.com) - This is a beta version of what many believe will become the world's most exhaustive academic library. Google Scholar enables you to search specifically for scholarly literature, including peer-reviewed papers, theses, books, preprints, abstracts and technical reports from all broad areas of research. Google Scholar is *not* primarily a full-text database. The links to titles and works that Google Scholar displays will very often provide only bibliographic information or abstracts.

Full Text Electronic Journals - subscription is needed for this database.

BioOne (www.bioone.org) - a full-text database that is focused on the biological, ecological, and environmental sciences. Entire articles may be printed directly from the screen as printable document format (.pdf) files.

PDF Search - It is becoming increasingly common for biologists to provide PDFs of their papers on their personal web sites. Consequently, if you know the name of a researcher in a given field, you can go to their personal web site to possibly obtain PDFs. For example, a prominent researcher in ecological and evolutionary herpetology is Rick Shine. Searching for "Rick Shine" on Google yields www.bio.usyd.edu.au/Shinelab/shine/shine.html. Clicking on this URL followed by the "Publications" link on Shine's web site sends you to more than 400 papers he has published, each in PDF format. If searching by researcher name does not produce the desired results, try searching for the university/lab/agency where the researcher works and then search for his/her name.

Directory of Open Access Journals (www.doaj.org/home) provides free pdfs. The Biology & Life Sciences section contains 81 journals and the Earth & Environmental Sciences section contains 76 journals.

BiologyBrowser (www.biologybrowser.org) - serves as a starting point for anyone seeking biology information on the Internet. Managed by BIOSIS, BiologyBrowser features free resources and useful links, and provides a forum for connecting hundreds of researchers and information scientists worldwide.

ActionBioscience (www.actionbioscience.org) - An educational resource of the American Institute of Biological Sciences, aiming to promote literacy. The site provides peer-reviewed articles by scientists, science educators, and science students in issues related to the seven bioscience challenges: environment, biodiversity, genomics, biotechnology, evolution, new frontiers in science, and bioscience education.

Ingenta (www.ingenta.com) The most comprehensive collection of academic and professional publications available for online, fax and Ariel delivery.

Scirus (www.scirus.com) - searches for scientific information from both free and journal sources and web sites that contain scientific content, such as university web sites and author homepages. Scirus currently covers the Web, ScienceDirect, MEDLINE on BioMedNet, Beilstein on ChemWeb, Neuroscion, BioMed Central and Patents from the USPTO. Covers more scientific sources than any other search engine.

Science Direct (http://quest.harding.edu/) - many full-text journals otherwise unavailable online. Accessing articles requires First time users of Science Direct will need to register and select a unique username and password. This site is a collection of science, technology, and medicine full-text and bibliographic information. Subscription is needed.

Cinahl The equivalent to the Cumulative Index to Nursing and Allied Health. Valuable database of relevance to nurses, occupational therapists and other allied health professions.

Psycinfo/Psyclit Database version of Psychological Abstracts. Useful resource for behavioural science topics.

Medline - PubMed Medline (Index Medicus) is one of the foremost biomedical information sources and now freely available over the web without charge. An excellent resource for searching the medical and related literature

DHSS-Data (Health CD) The database from which Health Service Abstracts is derived.

Caredata Useful source of information on the social care literature. This is available via the Electronic Library for Social Care.

Cochrane Library Database of systematic reviews of the research literature. Now been made available via the National Electronic Library of Health

Free Databases (ScHARR) Useful listing of freely available databases of relevance to health professionals.

ENB Nursing Database Database listing nursing journal articles and other nursing literature.

Eric Database American database listing journal articles and other resources in education and does include some OT articles.